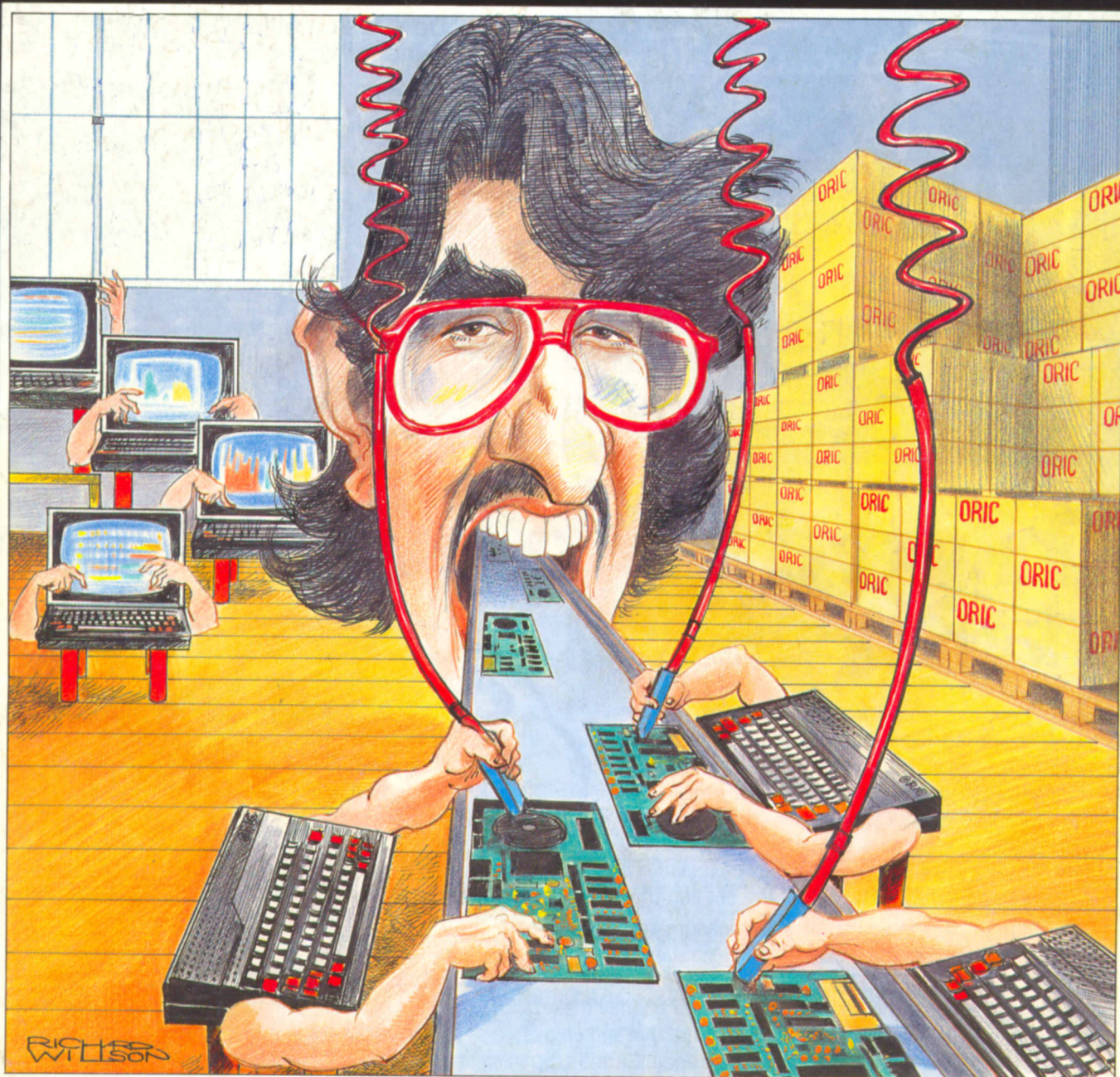


ORIC OWNER



OCTOBER/NOVEMBER 1984

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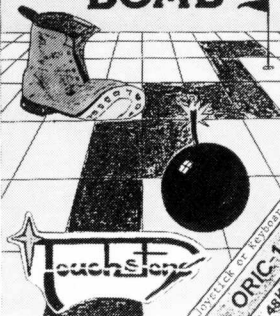
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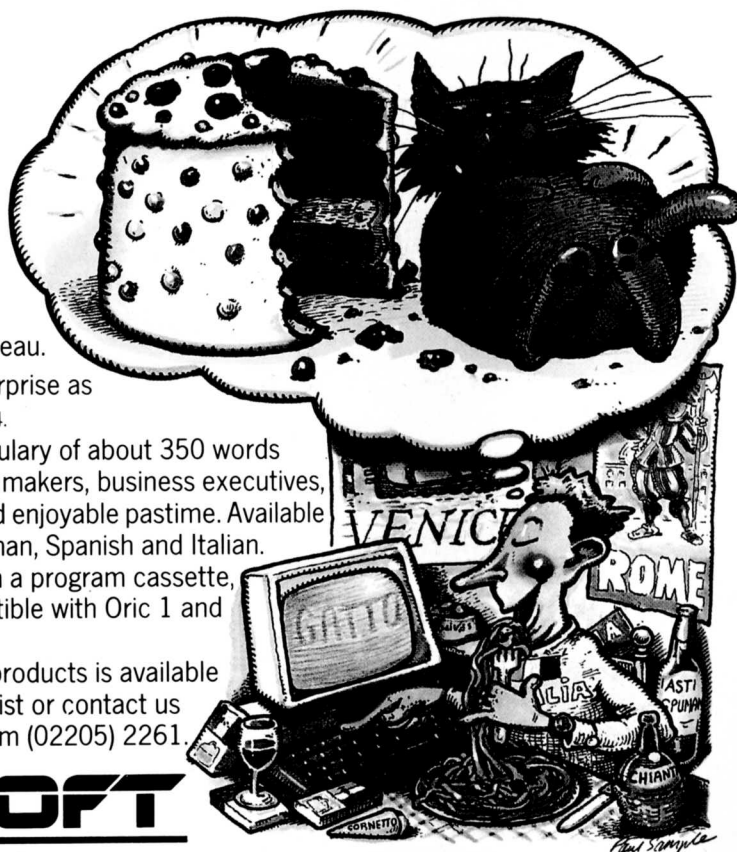
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TANSOFT



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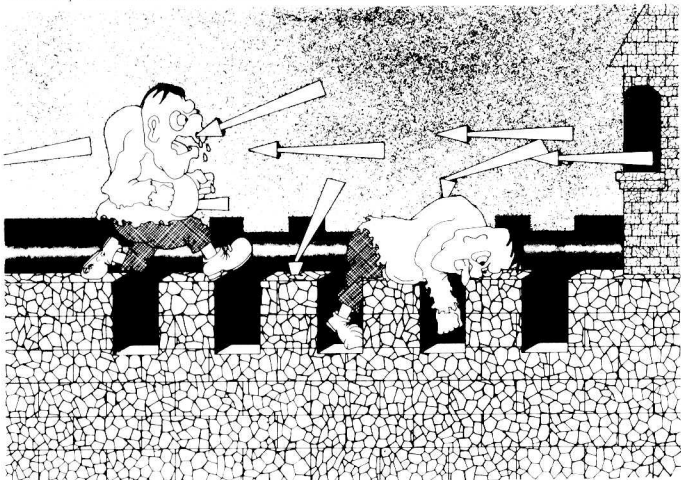
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Cover illustration by Richard Wilson

Editor's Comment

Oric Owner

Editor: Carolyn Groeneveld
Graphics: Carolyn Groeneveld
Publisher: Paul B. Kaufman
Printers: Heffers Printers Ltd.
King's Hedges Road Cambridge



On behalf of everybody involved with the Oric Owner Magazine, I would like to convey our sincerest apologies for the delay in the appearance of this issue. Due to this delay, we have called it the Oct/Nov issue instead of Aug/Sep but this will not change your subscriptions at all.

The problems were due to the sudden departure of Mr Cranswick, the Editor. At the time of his departure, this issue was only partially completed and the balance of the work fell upon us to complete. Some of you may have been told that the Oric Owner was to go monthly after this issue and that it would be available through the Newsagents. However, with fewer people working on the magazine, we have now decided to abandon this plan for the time being and we will be continuing with a bi-monthly magazine, available by subscription.

You may already be aware that we have started up an official Oric Club. This is aimed to give the Oric Owner the kind of support that a magazine alone can't offer. We therefore have decided to incorporate the Oric Club into this magazine, so that you will all benefit from it. Those of you that

subscribe to Oric Owner and have joined the Oric Club separately, will of course be refunded. You will all be given a membership card, names of other Oric enthusiasts in your area, discounts on software hardware, insurance, clothing and many other useful items or services. Current subscribers and future subscribers to Oric Owner will automatically become members of the Oric Club.

For those of you whose minds go blank when the words BASIC or Machine Code are mentioned, we have details of an Oric school that could solve all your problems. It's not only for beginners though, there are 3 courses to choose from designed to suit almost every Oric owner.

The Absolute Beginners course is aimed at newcomers to Oric computing. It sets out to introduce students to computing and the BASIC language. By the end of the course, students should be able to write simple programs. They will also be given the chance to try out various peripherals and software packages.

Inside BASIC is a middle level course, for those wanting to improve their BASIC skills. It has more theory tackling page 2 and ROM routines.

Assembly language is a course for would-be Machine Code programmers. It will teach a modular approach, and how to incorporate Machine Code into BASIC.

Each course will be limited to 12 students but will be repeated at regular intervals. The schools are held in the picturesque Norfolk town of Heacham. If you are interested, contact us for further details.

Well, with all these plans coming into action for issue 10 I've got plenty to do – so enjoy this issue and look out for the next one, it will be full of offers and information you can't afford to miss!

Carolyn Groeneveld.

Oric Owner is published at bi-monthly intervals by Tansoft Ltd. Units 1 & 2, Cambridge Techno Park, Newmarket Road Cambridge
Tel: 02205 2261
Reg. No. 1632070
ISSN 0265-8488
Subscriptions: £7.50 for six issues (UK only). Overseas rates on request
Backnumbers: £1.20 (7 and 8 only)
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OFFICIAL ORIC CLUB

ORICALL

THE INTERNATIONAL ORIC MAGAZINE CLUB

WELCOME...

We Oric-l and Atmos owners have been registered for far too long. Yet, despite the somewhat envious glances from owners of other computers, the number of Oric owners has grown tremendously over the last eighteen months. There are now tens of thousands of owners out there, whether they are fanatical game players, hardworking parents or hardworking students. Oric club has been set up for all of you.

Oric Club has just one goal - to improve the lot of the Oric user. With your support, we intend to do that in a number of ways. Firstly, there's this new letter, Oricall. It's all about Oric and your means of finding out the news you need to know, without browsing through half the magazines at your local WH Smith. We hope to get the news to you as quickly as the weekly magazines too.

Then there are the discounts. You've paid too good money to join Oric Club, and we intend to help you recover it many times over. We have already arranged substantial discounts on a range of software, with prices starting from 99p. Books, colour monitors, accessories - all will be available at attractive club prices. Details are in every Oricall.

But, most importantly, we want you to get in contact with each other, to talk about Oric computing, to exchange ideas, to try out the latest software and to have the club spirit. We'll put you in contact with other club members in your area, and if you want to set up a regional Oric Club, we'll provide advice. City in Oricall. We hope that there will soon be a nationwide network of branches, and even international links, so that Oric owners need never feel alone.

So, that's what Oric Club has in store for you. Welcome aboard, and may your next bottom mean be needed.

ORIC CLUB

A nationwide network of Oric users, a monthly club magazine, special offers galore - all are promised to members of the newly launched Oric Club. What's more, the club has the blessing of Oric Products International.

The aim of the club is to put Oric users in touch with one another. Each member will be invited to fill in his or her interests on the application form, and asked whether they want to be put in touch with other local members. It is hoped that regional meetings will be organized, and area groups formed. Any member will be able to get publicity for activities through the monthly club newsletter, Oricall.

Oricall will also contain details of special offers available only to club members. In the first issue of the magazine, there is software priced from 99p, discounted books and colour monitors from just over £100. The club has also negotiated a discount computer equipment policy.

The club plans to take out pages on the Oric data base, offering exciting possibilities to members with a modem. An application form, and further details, are on page 55.

PERFECT LOADING

Durell Software have come up with a cassette loading aid that they claim will enable virtually any cassette recorder to be set up correctly for any Oric computer.

The system was invented by Ron Jeffs, author of Harrier Attack. Robert White, Managing Director of Durell Software, outlined what is involved.

Enter this program:

```
10 HIRES
20 FOR N=#A000 TO #BF3F
30 POKE N, 42
40 NEXT N
```

Now RUN this program and save the screen memory block: CSAVE "PERFECT LOAD", A#A000, E#BF3F

Now, to check that the controls of a cassette recorder are set correctly, CLOAD "PERFECT LOAD". The screen should fill with the pattern of lines. If the cassette volume or tone is set incorrectly, corrupting the loading, the screen pattern will be irregular. Coloured blocks may appear, areas of blank space and so on. Adjust the recorder until a clear pattern emerges. You then have settings that should give trouble free loading.

If you can't duplicate the pattern, you know that the

cassette recorder is not suitable for the job.

Durell will have this loader at the start of all their future Oric games, and are keen to see other software houses adopting the system. If every software package had this loader, users could set up their equipment to the optimum settings, and cassette loading problems would be drastically reduced.

Jungle Trouble, the first Durell program to have this system, is a lighthearted arcade/adventure game set in a jungle. The player has to complete various tasks, such as chopping down a tree, while stopping monkeys from stealing the axe. It is written by Ron Jeffs and has four different screens.

Durell's major program for the year is to be released at the Farnborough airshow. Called Combat Lynx, it has been developed in conjunction with the Westmoreland helicopter company. It is a flight simulation package in which the player has to battle enemy tanks. Simulated 3D graphics add to the fun, and there is a terrain memory map, so you can see all sides of the terrain. Availability is expected at the end of August.

AOSH

Several leading Oric software houses have set up a joint body, called the Association of Oric Software Houses. It is designed to further intercommunication between software houses about the Oric computers, programming techniques and so forth.

A statement from AOSH says "It was unanimously agreed that Oric had found a winning product in the Atmos, and that public, dealer and distributor awareness of both the machine and the software should be improved."

AOSH can be contacted through member companies.

80 COLUMN PRINTER COMING

Oric have shown a new 80 column printer, due for release shortly. It will sell for around £250.

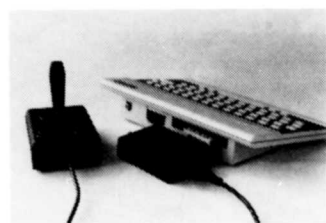
The printing system is dot matrix, and the standard is claimed to be letter quality. It works at a very much faster rate than the MCP-40 printer/plotter, but has little in the way of graphic capability. Made in Japan, in Oric colours, it has a Japanese typeface built in. The interface is Centronics.

GRAPHICS COURSE

The University of Birmingham is planning a ten week course on Oric graphics and programming skills. The course is to be based on the Graphic Kernel System, an international system for two-dimensional graphic displays. Screen windows, object movements and drawing are just some of the topics that will be covered.

Due to start in January, 1985, the course will cost around £10. If interested, contact Mrs S. Laflin Baker, Aston Webb Building, Lecture Room 7, University of Birmingham. The telephone number is 021 472 1301.

JOYSTICK INTERFACE



Downsway Electronics have released a new joystick interface for the Oric-l and Atmos computers. It connects to the input/output port and takes standard nine pin joysticks. It costs around £30.

Programming is simple. Press the key appropriate to a direction of movement, hold it down and move the joystick in the appropriate direction. This data is stored in the interface's memory. A program is then loaded and the joystick will operate instead of keys. Downsway claim the unit is compatible with all Oric software. Up to eight directions, and fire can be programmed.

For further details, contact Downsway on (03727) 27222. Their address is Depot Road, Epsom, Surrey KT17 4RS.

ORIC IN CONCERT



Time travel, an American musician and a brace of Orics came together for an eleven night series of concerts in Paris recently. The Orics provided sound and graphics.

Jim Cuomo is the man behind the event. An established musician, he has been experimenting with Orics since October. With three machines, a drummer and a narrator, his stage spectacle recreates a future crime in which a musician using computers disappears. During the show, the computers apparently start to malfunction, and the musicians get more and more worried. Eventually the saxophonist does disappear.

Programmed in Forth and BASIC, the Orics display HIRES images on three television screens, and are used to generate the taped backing tracks. Live saxophone, percussion and vocals complete the spectacle.

Jim Cuomo is evidently keen to experiment further with computerised concerts. He plans to implement more advanced programs in which the computers simultaneously produce sound and images. The French media have given him plenty of coverage too, with more to come. He is also hoping to arrange some concerts in Britain, if a suitable venue can be found.

SECTOR 7 SOUNDS

Sector 7 Software have announced the winners of their Composer competition. The entries were so good that they had to award three first prizes.

The competition was open to anyone who purchased the Composer software program. Music composed with the program was submitted to Sector 7, with a £100 prize offered to the best effort. The three joint winners

were Mic Houghton, for Sabre Dance, Trevor Shaw, for Popcorn and J. Collins for Only You. The company sent Oric Owner a tape of the winners and near-winners. The quality of the entries was indeed excellent, and ably demonstrated the sound potential of the Oric.

Composer is available from Sector 7 Software, P.O. Box 8, Newton Abbot, Devon TQ12 1UE, and costs £6.50.

SUPERIOR SOFTWARE

Atmos owners now have five more programs to choose from, under the Superior Software name. Four are Atmos-compatible versions of existing Oric-1 programs, the fifth is brand new.

Krokatile Waltz is the new game. You are a jungle native and your task is to protect two species of kroatiles. You must safeguard their food, keep hunters at bay and keep numbers down. Written entirely in Machine Code and for 48K machines only, Krokatile Waltz costs £7.95.

There are two utility programs for the Atmos, costing £9.95 each. Toolkit includes a disassembler, a monitor and several other commands. Assembler is a two pass Machine Code assembler that makes use of the new commands on the Atmos, and will work with the Microdrives attached.

Geography is an educational program for 48K machines. It teaches countries, capitals and populations, at a variety of levels, and costs £7.95. The final program is Lunar Mission, also £7.95.

The distributor of Superior Software is Darkstar, 32 Sovereign Street, Leeds LS1 4BJ. The telephone number is (0532) 450879.

TANSOFT TITLES

Tansoft have four games titles scheduled for release very soon. One is an adventure game.

Harridges is a game along the Manic Miner lines. Set in a multi-storey department store, you are the shop manager, having to collect money from the tills. Trying to frustrate you are fridges, Hoovers, lawn mowers and so on, all going berserk. It will sell for £7.95.

The Kilburn Encounter is a text-only adventure game, satirising other adventure games. It is Pythonesque in nature, featuring old ladies, dead bishops and drunken Australians. The price will be £5.00.

Insect Insanity is to be the follow up to Rat Splat, while Rig Runner is a new arcade that has you rescuing oilmen from a rig by helicopter.

Tansoft are also working on a Pascal compiler.

QUICKSILVA'S TWO

Quicksilva, well known for their Spectrum and BBC games have released two existing titles for Oric-1 and Atmos machines. They are Mined Out and Velnor's Lair.

Mined Out is a strategy game. You have to manouver your man through a mine field, guided only by audible warnings of nearby mines. An electric fence surrounds the mine field, and movement is by cursor keys. There are nine levels to the game, and at higher levels, you encounter walking mines, have to rescue damsels and eventually have to rescue Bill the Worm.

Velnor's Lair is a text-only adventure game. It has 200 locations and the Spectrum version has been very well received. Both programs are priced at £6.95.



ORIC MODEM LAUNCHED



Oric have at last launched a modem for their computers. It had been promised since the Oric-1 was first launched.

The V23 Modem is British Telecom approved and sells for £100. That price includes supporting software, cables and a modem adapter unit. The modem works with all Oric computers.

Oric are also taking out a substantial number of pages on the Prestel system, planning to use it as a data base for subscribers.

The modem connects to the input/output port and software is loaded from cassette. The modem is plugged into the new style plug type telephone socket. You may need to get old sockets changed. The telephone plugs into the modem and the software is loaded up. You then call up Prestel and you have a full function Prestel terminal.

You can access the Prestel pages in a number of ways. Pages can be found by the use of menus, or by page

number. With a 48K machine, between 40 and 99 pages from Prestel can be held in memory. Any of these pages can be saved to tape, and loaded back from tape at a later date.

Most Prestel pages are available for just the cost of a local phone bill. There is a quarterly charge of £13 for connection to the service. Some pages may cost extra.

Modem users will also be able to access the Micronet network, for clubs and computer related information. They will be able to use the electronic mail service, order goods directly and make use of all the services Prestel offers.

The modem is in Atmos colours and measures 23.5 x 16.5 x 5.5cm. The modem adapter measures 12 x 6.5 x 5cm. It operates at 1200 baud in the half duplex mode and 1200/75 baud in the full duplex mode. No software for the downloading of programs is available at the moment but is being written.

MIDLAND COMPUTER FAIR

Oric owners attending the Midland Computer Fair in early May had to look hard for news. Oric Products International had a large stand, and were displaying their latest equipment. Tansoft were the major software house present.

Ikon Computer Products were showing a super-fast tape loading system, the Ultradrive. They told Oric Owner that plans for an Oric compatible version are well advanced.

The Hyperdrive uses mini-cassettes and can load data from any part of a tape in an average of less than 20sec. Data is transferred at 12000 baud, and each tape holds 70K per side. The operating system occupies 16K, but lies sideways to the ROM. A final product is expected soon, at a price of £80.

Doublemode Ltd were another company of interest. They buy ex-rental TV sets and turn them into colour monitors that sell for a very reasonable price. Each monitor also has a switch that will turn into a green screen monitor.

A 20" monitor costs £99 plus VAT. 22" and 26" monitors cost £119 and £139 (ex. VAT) respectively. A lead for from monitor to Oric costs £2.60 plus VAT.

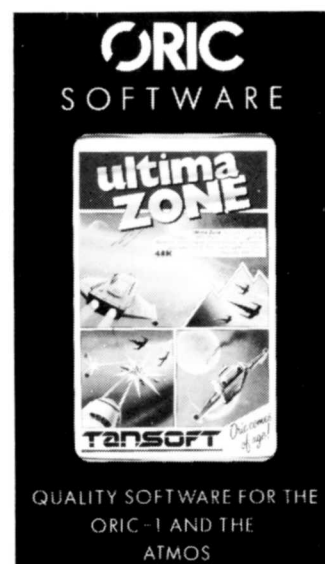
Saga Systems Ltd, the keyboard people, told Oric Owner to watch out for some Oric-related developments. They are working on a joystick and three software packages.

On the games front, Defence Force was one of the five games in the Software Pentathlon. Daniel Childs of Leeds was the overall top scorer on the game, with a total of 409,020 points. For that marathon effort, he won himself a brand new Oric Atmos.

ORIC-BRANDED SOFTWARE

Oric Products International and Tansoft Ltd. are jointly planning to market a range of selected software titles to be made available before Christmas.

At the time of writing, the numbers of titles for inclusion in this range was not known but it is envisaged that about one third of the titles will be business/utility and educational packages.



Until retail distribution of the range can be established all products will be made available on a mail order basis.

Each selected title will be packaged in a distinctive Oric Software package, and credit will be given to the company producing it.

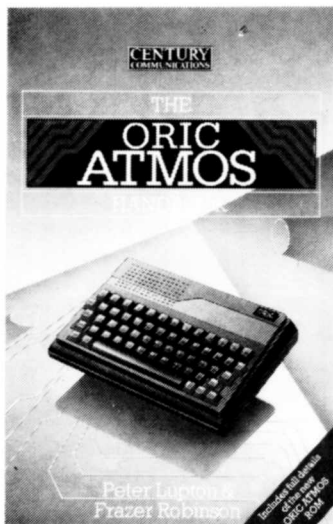
A panel of experts will decide which title to include and would make arrangements concerning the terms of trade with the companies concerned.

HIRE AN ORIC

Mirco Hire are a Solihull based retailer, hiring our popular computers and peripherals. They have stocks of Atmos computers and Microdisc units. To rent the disc drive costs £19.95 per month, with discounts for long

term rental. You can also rent packages, such as an Atmos and cassette recorder for £15 per month. Further details can be obtained from Microhire Ltd, P.O. Box 61, Solihull, B91 3LT. The telephone number is 021 705 9330.

On The Bookshelf



The Oric Atmos Handbook
Peter Lupton & Frazer Robinson
Century Communications
250pp £5.95

This is an updated version of The Oric Handbook, aimed at the Atmos owner.

Its predecessor was a competent volume that nicely filled in the gaps of the Oric-1 manual. This new version has full details of the new ROM.

It assumes no previous knowledge of computing and takes you from the initial setting up of the machine. It then takes you through the rudiments of BASIC programming. The style is readable and there are frequent summaries of the points made.

The last chapter deals with the new commands of the Atmos and includes a useful address file program. After that, there is a whole series of appendices, detailing commands, error messages, screen locations and giving useful advice on editing or speeding up programs.

Several areas are dealt with exceptionally well. All three display modes are tackled in depth, and there is a useful introduction to Boolean logic. Machine Code is not touched on.

Given the Atmos manual is quite good, this book has a stiff task to perform. Still, at £5.95, it is good value.

8 Oric Owner

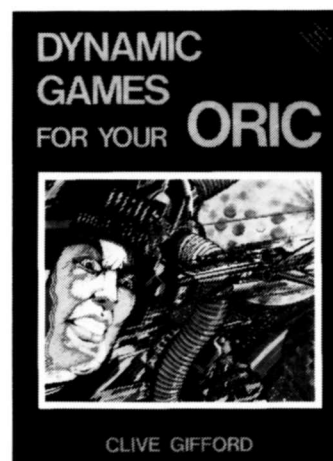
Dynamic Games for your Oric

Clive Gifford
Interface Publications
210pp £4.95

One look at the title tells you that this is another book of program listing for owners of the Oric-1 computer. It contains 36 programs of varying length and sophistication.

All the games are preceded by a short introduction, explaining the game and outlining any programming tricks. There are no illustrations, presumably in the interests of economy. The listings themselves are in large type and none are daunting in their length.

The games are a mixture of old favourites and original ideas. Some are traditional, some arcade, and some are

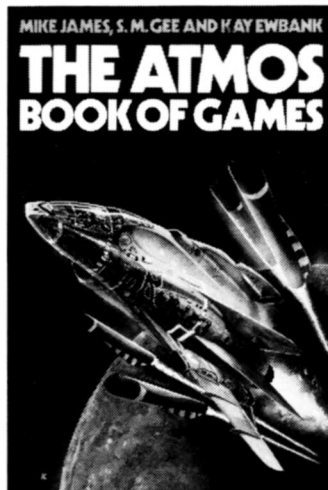


strategic.

The most attractive games are Moopoly, Houston, We Have a Problem... and ROM Bug. There are also a number of graphics demonstration programs too.

The last pages of the book are read chapters. They outline possible applications for your Oric, give advice on improving programs and cassette recording. There is also a useful index of books and a dictionary of terms.

At £4.95, this is thus a good value for money book of programs for any budding programmer.



The Atmos Book of Games
Mike James, S. M. Gee, Kay Ewbank
Granada Publishing Ltd.
143pp £5.95

This is a reprint of the Oric Book of Games, with the listings modified for the Atmos. It has a different cover.

There are 21 games listed. All are prefaced by a short introduction, and a picture of the screen so you know what sort of game you are about to type in. The introduction explains the game, how the program is structured, highlights any tricks of the trade and suggests possible improvements.

The programs break no new ground in quality or originality. They are either action or strategy games, plus a smattering of word puzzles. There is Noughts and Crosses, a fruit machine, a word search, a horse race... little that hasn't been done before.

Still, the idea behind books like these is to give simple programs that can be learnt from and improved on. They also save you buying stacks of magazines, and may give you some ideas for more original games.

This is neither the finest nor the best value book of listings for the Atmos. Still, it is one of the first, and will be widely available. Atmos owners will find it not a bad buy.

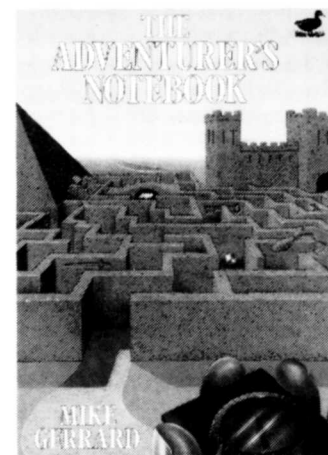
The Adventurer's Notebook

Mike Gerrard
Gerald Duckworth & Co. Ltd.
126pp £3.95

This is a practical book for the adventure game enthusiast in every sense of the word. It is a very useful aid.

The bulk of the book consists of pages you fill in during the course of a game. There are squares to represent locations, pages for notes of useful vocabulary, the results of actions, locations of objects - all the sort of things you normally write down on scraps of paper before you lose them.

There is space for plenty of adventures to be recorded, and if you are a keen fan, the book could well be a diary of events. It is ring bound too,



for greater convenience.

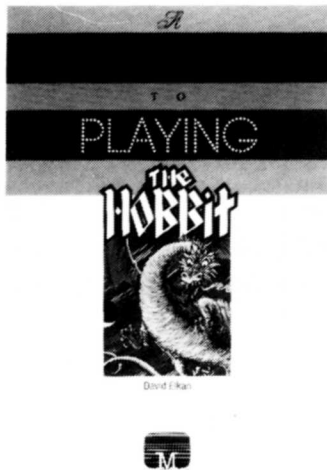
At the start, there are a few chapters to read.

They explain the nature of an adventure game and the purpose of the book. There then follows an excellent chapter with hints and advice on playing adventure games.

A brief history of the genre follows, recapping much familiar ground. Then there is a guide to some of what's available for various machines, including the Oric. The information is up to date. There is also a page of useful addresses.

All in all then, this is a very handy volume, and one that is reasonably priced too.

On The Bookshelf



A Guide to Playing the Hobbit
David Elkan
Melbourne House
76pp £3.95

The Hobbit has been one of the most successful adventure games written for home computers. For all those who have puzzled over it, this slim volume will be a Godsend.

It is published by the publishers of game and arranged in three parts. The publishers claim that by using the clues in the book, one of the many solutions to the game can be found.

The first section is a general guide to better playing. There are tips on vocabulary, actions, mapping and the main characters. It is all useful material.

The next section offers more concrete advice, for each of seven major locations. The responses you get to HELP are given, plus hints. Some of these are in code that must be deciphered.

The third, and longest section details each location in turn. A screen picture is shown, possible exits listed and clues given. The book is structured so that advice gets more and more detailed the further you read.

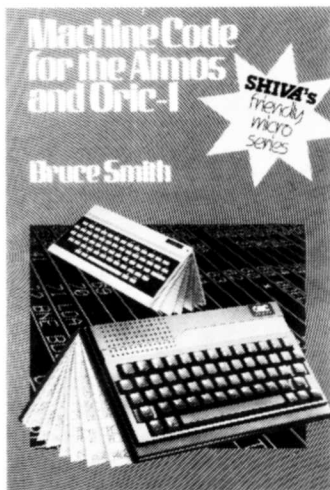
Certainly our Hobbit game was made far easier by this book, and if you are really stuck, it is a great idea. The price is reasonable and the advice useful.

Machine Code For The Atmos and Oric-1
Bruce Smith
Shiva Publishing Ltd.
£6.95

This is the first book we've seen on Machine Code for Orics, so that should help it along. The aim is to introduce the ideas of Machine Code, in a way that the beginner will be able to understand.

To that end, it succeeds rather well. The advantages of Machine Code, hexadecimal numbers, binary arithmetic and registers are all introduced early on. Then it is into addressing modes, stacks, loops, jumps, shifts, routines – all you need to follow Machine Code.

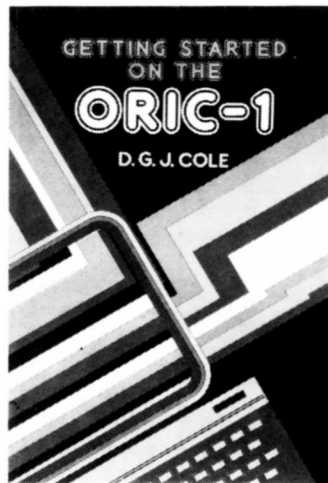
There are plenty of practical examples given



along the way, even if they are for very, very, simple applications.

After all the heavy stuff, there are half a dozen appendices. They take up nearly a third of the book, and detail all the instruction codes, ASCII codes, give a memory map and so on. Unfortunately, much of this is repeated from the manual, and the space might have been more profitably devoted to more examples.

Still, the reader will end up having used some Machine Code, and hopefully with a working practical knowledge that can be extended with experience.



Getting Started on the Oric-1
D. G. J. Cole
Ellis Horwood
164pp £5.95

For all those who struggled through the Oric-1 manual, here is another book that attempts to get the user more familiar with the machine.

It starts right at the beginning, with the emphasis on learning at the keyboard. The book culminates in a Blackjack program.

The style is clear and not too technical. Machine Code, Boolean algebra and so on are not dealt with. This is a book for first timers.

Chapters deal with various areas of Oric operation. There is a section on sound, another on graphics, and another on mathematical routines. There are also a number of chapters dealing with BASIC program structure – loops, arrays, subroutines and so on. Most points are illustrated with short programs. These include a useful character generator and a HIRES drawing aid.

Overall, Oric's BASIC is covered pretty thoroughly, and in a clear manner.

Advances since the Oric-1 date this book. There is no mention of the Atmos, the printer, disc drive or other add-ons. Original bugs are acknowledged but remedies are not suggested. So, though reasonable enough it's not a great buy.

BACK ISSUES

If you've enjoyed this issue of Oric Owner, you may like to avail yourself of our back issues service. Some issues are sold out completely, but we do have limited numbers of issues 7 (April/May '84) and 8 (June/July '84). Back issues costs £1.20 each. Make cheques or postal orders payable to Tansoft Ltd.



April/May '84 – Practical Machine Code II, Pinball, educational software, Append/Renumber, Forth, hints, tips and much, much more.

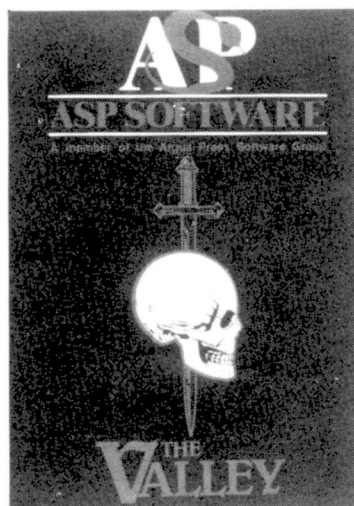
June/July '84 – Dr Paul Johnson interviewed, Microdrives on test, sound explained, Star Cruiser, Slot Machine, Puss in Boots, Yahtzee, plus quickies, letters hints and so on.

ORIC-1

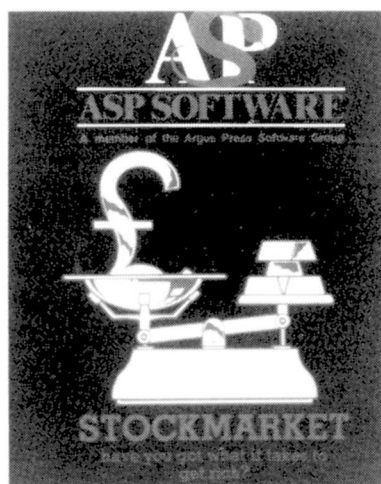
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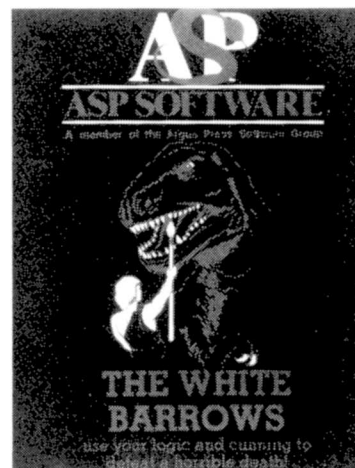
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Software Scan



Probe 3
IJK Software
Oric-1/Atmos
£7.50

Once again, aliens are on the attack. Your task is to survive their onslaught.

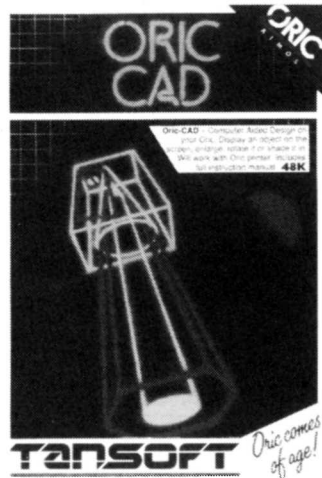
Against a starry background, saucer-like alien ships approach you at speed, growing in size as they complete a downward swoop. They each release a plasma bolt at you. You have to dodge that and destroy the ship, firing when each ship reaches the bottom of its attack run.

Destroy 20 ships and you move up a level. At levels two and above, missiles are fired from the planet surface too. The higher the level, the faster the ships, and the more that get by you, the more missiles are fired from below.

The controls are simply right, left and fire. There is a sound off option. You can also choose the level you start at too. There's a hall of fame at the end of each game.

Getting the hang of Probe 3 doesn't take long, and the first three levels are quite easy. That is an advantage if your reflexes are slow, but if you are a fan of Invader-type games, Probe 3 is a little bit simple. Arcade beginners will find it plenty of fun.

Originality	★★
Sound	★★
Graphics	★★★
Addictiveness	★★★
Value	★★★



Oric Cad
Tansoft
Oric-1/Atmos
£9.99

CAD stands for Computer Aided Design, and this is the first package of this type we've seen for Oric computers.

The cassette comes with a comprehensive user manual. Fast and slow recordings are provided. You'll need to study the manual to make the most of this program, though there is a demonstration mode to whet your appetite.

The facilities are comprehensive. Planes of a solid object are drawn one at a time. The object can then be viewed, at a variable distance and with hidden lines removed, or as a wire frame object. The viewing angle can be changed and the object shaded.

Three objects can be held on the screen at one time. Text can be added, screen colours changed and objects saved to tape.

The object rotation is not that fast, and shading takes a long time, but for those interested in CAD, this is a useful program.

It comes with comprehensive documentation, and with a few hours practice, you'll be quite adept at CAD.

Facilities	★★★★
Instructions	★★★★
Ease of Use	★★★
Value	★★★



Blowtorch Blaster
Touchstone
Oric-1/Atmos
£5.95

This is one of those games that is almost impossible to get the hang of. There are screen instructions at the start, but once the game is started, you can't get back to them, and the case instructions are minimal.

The idea seems to be to land a spaceship on a planet, collect energy and return to the mother ship. The first part is an advanced version of Lunar Lander. You have to clear a part of the planet's surface with bombs and retros, then land in a safe area.

The next part involves you shooting energy bolts, with each hit giving you energy. You must then take off and get to the mother ship.

The sound and graphics are OK but far from exceptional. The controls work rather slowly, and as you have only three lives, getting very far in the game is very difficult.

So, it is not a game we can highly recommend. It is too difficult at the start and doesn't have the quality to keep you trying to master it.

The price is reasonable, but that's about all.

Originality	★★★
Sound	★★
Graphics	★★
Addictiveness	★★
Value	★★



Them
Virgin Games
Oric-1/Atmos
£5.95

Written by Andy Green, the author of Ultima Zone, this is Virgin's second Oric program. It is a pretty fair effort.

The game is in five sections, with fourteen levels to each section. There's a Hall of Fame, on-screen instructions, game pause, sound off and you can choose any of the five games, or a cycle, to play.

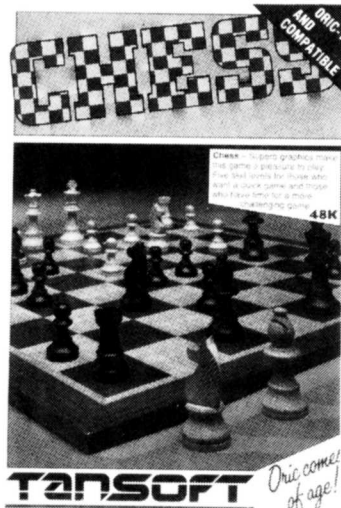
The game is packaged in a flamboyant style and the credits are very fancy. The games themselves are OK.

The first part has you avoiding predators in a grid and collecting objects. Then there's a game where you have to align blocks of colour flying across the screen. There's a monster shootout, of the 'we've got you surrounded type', another shooting session from a moving conveyor belt and a bone matching game. The second and fifth games are the least appealing.

Sound and graphics are used quite well, and this game won't disappoint, as the whole is greater than the sum of its parts.

Originality	★★★
Sound	★★★
Graphics	★★
Addictiveness	★★
Value	★★★

Software Scan



Chess II
Tansoft
Oric-1/Atmos
£9.99

The original Chess from Tansoft was not without its faults. This version is very much better.

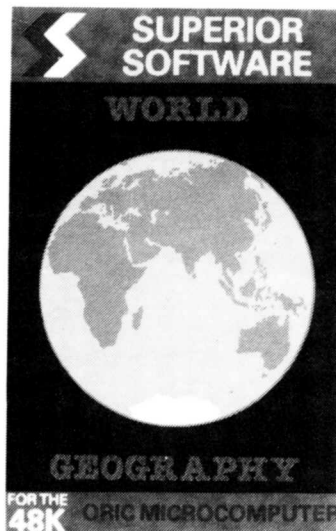
A novelty feature is the use of a synthesised voice to state the moves the computer makes. It even tells you if a move is illegal! The voice can be silenced if desired, as it is not too easy to understand.

The game has five levels, with the top level taking several hours per move. At the first level, moves take just a few seconds.

Options include a change sides, save or load a game position, wipe a section of the board and set up pieces. Instructions are on a loose insert.

Compared to the original Chess, this version is faster, plays a better game and has better features. Screen graphics are good and if you fancy having a go at beating your computer, a program like this will set you a challenge. Level one is not difficult, but at higher levels, you'll have a fight on your hands. This is a much improved Chess program.

Originality	★★★
Sound	★★★★★
Graphics	★★★
Addictiveness	★★★
Value	★★★



World Geography
Superior Software
Oric-1/Atmos
£7.95

Countries, capitals and populations are the subject of this educational cassette from Superior. Unless you are a Mastermind champion, you won't get all the answers.

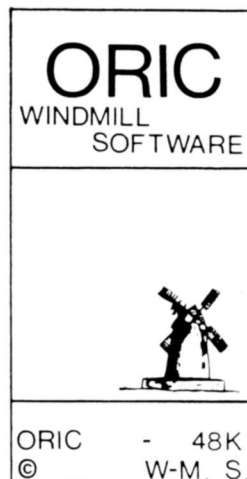
The tape comes with fast and slow recordings. Instructions are given on screen. There are eight levels of difficulty to choose from, and you can opt to be questioned on capitals, populations or both. Twenty questions are given, and a percentage score shown at the end.

The questions appear below an excellent HIRE map of the world, in blue and green. The country in question is shown by a flashing square.

Right answers receive a beep, wrong answers a buzz and the correct answer. Populations must be to within 20 per cent.

With the eight levels, you are bound to have some difficulty, and bound to learn some geography. It is a package with limited scope, but what it does, it does very well indeed. It's a welcome addition to Oric software.

Facilities	★★★
Instructions	★★
Ease of Use	★★★
Value	★★★



Grafix
Windmill Software
Oric-1/Atmos
£7.95

Design aids for the Oric don't come much better than this German package. If you want to experiment with HIRE graphics, try this program.

The accompanying manual details the many commands. There's a keyboard overlay for the Oric-1 too.

Commands include the usual pixel by pixel drawing, circle and box routines. FILL routines give the options of automatic or manual filling, and full or half shading. You can add text, create a screen window, insert attributes at any point on the screen, use a border – all you could want. Final images can be saved to tape, or reloaded from tape.

An odd feature is that the program has English and German versions. An annoying feature is that the command keys aren't easily related to their function, and the keyboard overlay is essential.

A demonstration picture shows the scope of Grafix. With practice, it is a useful design tool. It can be mail ordered from the German distributor in Gifhorn.

Facilities	★★★★★
Instructions	★★★
Ease of Use	★★
Value	★★★



Green Cross Toad
IJK Software
Oric-1/Atmos
£7.50

Here's Frogger by another name, and a good version it is too. All the usual features are incorporated, and Oric's graphics used to good effect.

You have five frogs to manoeuvre across a four lane highway to a central reservation. You then have to jump a river, using turtles and logs, while avoiding a snake and diving turtles. All this is done against the clock too.

The sound level can be raised or lowered. Controls are simple, and work well. Screen instructions explain the game.

Mastering Green Cross Toad will take some doing. The Hall of Fame is not easily entered. Still, you'll have a lot of fun trying, and really exercise your fingers trying to master the game.

While the idea is far from original, IJK have incorporated all the best features of the game and produced a package that may well end up in the software collection of Oric owners who didn't get enough of Frogger when it was a popular arcade game. Well done, IJK, this is a good program.

Originality	★★
Sound	★★★
Graphics	★★★
Addictiveness	★★★
Value	★★★

Software Scan



Krokatile Waltz
Superior Software
Oric-1/Atmos
£7.95

You play the part of a native, trying to survive amidst breeding Krokatiles, water snakes and predatory hunters. You have a raft and a number of spears with which to protect yourself. The idea is more original than most.

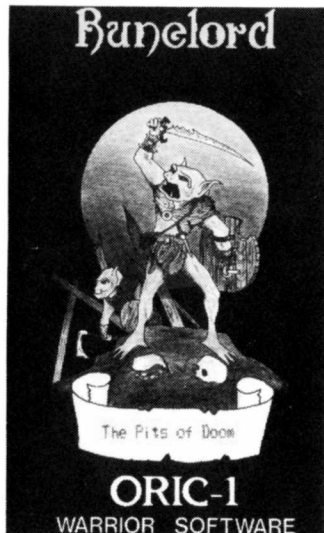
Controls are simply cursor keys and the space bar. There is a pause facility, variable volume and adjustable level. Screen instructions are duplicated on the inlay card.

The graphics are chunky and colourful. Some of the movements are quite amusing, and your figure responds quickly to commands.

The game takes a little familiarisation and then becomes good fun. There are tactics to be adopted, and high scores don't come easily. The fact that you only have one life shortens the game considerably, but you'll learn to accept that.

Though graphics could be improved, this is a novel, amusing game for the Oric and worth trying out. It's great fun to play.

Originality	★★★★
Sound	★★
Graphics	★★★★
Addictiveness	★★★★
Value	★★★★



Runelord
Modular Concept
Peripherals
Oric-1/Atmos
£7.50

In the original, non-computerised adventure games, generating a character with certain attributes and equipping him was a major part of the playing. Runelord is one of the very few adventure games that has this feature.

The program is in two parts. The character generator module makes up a character with varying strengths. You name and equip the character before saving it to tape. Such generated characters are then used in game modules, such as The Pits of Doom, of which forms the second part of the program.

The game has good HIRES location pictures and good descriptions. A text window accepts player input.

The game has a few faults. Text scrolling is a little too fast, some obvious commands are missing and the room contents do not decrement as objects are taken. Still, this is only an introductory module, and we'll have to see if later modules do better.

Originality	★★★
Sound	★
Graphics	★★★★
Addictiveness	★★
Value	★★★★



Gamespack
Sector 7 Software
Oric-1/Atmos
£7.00

Seven games for seven pounds from Sector 7 sounds like quite good value for money. It is, if you don't expect too much.

Laser Station has you firing at photon bolts from a base that automatically scans the sky. Though there are two 'skill' levels, it is a game that will hold interest for two minutes.

Obstruction is a version of Light Bikes, a passable version at that.

Mazatronic has you trying to find the way out of a maze.

Demolition is a version of Bomber (yawn!), while Noughts and Crosses needs no introduction (yawn, yawn).

Millibox is the best game, with seven levels along the lines of Pacman. It is very easy to play though. Finally, Maths Test, in which correct answers are rewarded by a crack at a space invaders game. Kids will like that.

All in all, it is not a package that can be highly recommended, unless you like simple games. A book of listings would be better value.

Originality	★
Graphics	★
Sound	★
Addictiveness	★
Value	★★



Nowotnik Puzzle
Tansoft
Oric-1/Atmos
£6.90

Remember the Rubik cube – a fad that has long since swept past? This program is a screen version of that infuriating puzzle.

The computer starts with a square of four coloured blocks. It randomly juggles them up, and your task is to restore the original pattern. It is a task that is not easily accomplished, even on the lowest of the five levels.

Machine Code keeps the block movements quite speedy, and they are accompanied by a simple sound effect. There is a quit option if you want to give up.

Rubik cube fans may find this puzzle appealing. Most won't. There is little description of the programming on the packaging, and the idea is old hat now. After one or two failed attempts, you'll probably give up the puzzle as too complicated, and not nearly addictive enough.

A program like this needs to be much less expensive, or jazzed up to increase the addiction rating. As it is, it is very difficult to recommend it to Oric owners.

Originality	★★★
Sound	★
Graphics	★★
Addictiveness	★
Value	★

Software Scan



Word Search
CDS Micro Systems
Oric-1/Atmos
£5.95

Word Search is an educational program in which the player/s must make as many words out of a given word, against the clock. It is written with the classroom very much in mind.

Loading takes three minutes. There is an opening page, music and comprehensive on-screen instructions. The tape has Oric-1 and Atmos recordings, one on each side.

There are 32 words to start with, and from 22 to 58 words to be made from them. The time can be set from one to nine minutes. Errors are counted, and player names are used.

Though a modest enough idea, the program is well executed and very robust. It can be used as a keyboard familiarization program too. The author, Pete Beckett, has done well.

The only slight criticism is that answer words are given alphabetically, so it isn't difficult to guess a word missing between two found words. Still, this is an excellent classroom program at a good price.

Facilities	★★
Instructions	★★★
Ease of Use	★★★
Value	★★★



Frigate Commander
IJK Software
Oric-1/Atmos
£6.50

As commander of an armed frigate, you have to hunt and destroy three submarines. That's the scenario for this Trek-style game.

The screen shows the Sonar and Radar displays, weapon status and a blank seascape. Using the map command gives a display of an island and your position.

During the game you have to fend off attacks from enemy ships, homing missiles, aircraft and submarines. You have Exocets, depth charges, Seacat and Seawolf missiles to do this. You also have to avoid running aground or going off the map area.

The pace of the game is sometimes very slow. The seascape display shows missiles being fired, bombs falling, and aircraft crashing. Such displays are all too rare, and much better use could be made of the display.

It is not difficult to discover good tactics. After that, it is unfortunately a matter of luck as to how high your score gets. If you get all the subs, the game ends abruptly. So, a nice attempt, but it could have been much better with a little more thought.

Originality	★★★
Sound	★★
Graphics	★★★
Addictiveness	★★
Value	★★★



Assembler
Superior Software
Oric-1/Atmos/16K
£9.95

Entering Machine Code by mnemonics is far easier than using op-codes. This assembler is therefore very useful to the Machine Code programmer.

It has a copious list of commands. It will accept all 6502 mnemonics, hexadecimal, binary or octal numbers, and character strings. REMarks can be added, memory reserved, values assigned to labels and bytes or words defined.

Programs are entered as a BASIC program would be, with sequential line numbers. Colons separate different instructions on the same line. You input the start address for the assembled routine and CALL that address to access the routine. Programs entered like this can be saved to tape, as a BASIC program.

Documentation is limited to a description of the commands, and could be better.

When assembling takes place, errors are indicated. This assembler is a two pass assembler. If you are using Machine Code, an assembler makes a lot of sense, and this SS version is well up to scratch.

Facilities	★★★★
Instructions	★★★
Ease of Use	★★★
Value	★★



Grid Bomb
Touchstone
Oric-1/Atmos
£5.95

This effort from Touchstone is very much better than Blowtorch. It is written in 100 per cent machine code, has variable volume and is joystick compatible.

You have to manoeuvre a man around a grid, trying to reach a bomb that is counting down, while avoiding mines and collecting bonus points. It is easy to get the hang of the game, and there are eight screens.

The level can be raised by shortening the countdown time, or adding a stamping Bovver Boot. Instructions are quite clear.

The action is fast and amusing. The graphics aren't of the highest possible standard, but they are good enough for a game of this sort.

Controls are logical – it takes suprisingly little playing to be able to get a high score. Sounds of a Scott Joplin rag accompany the action.

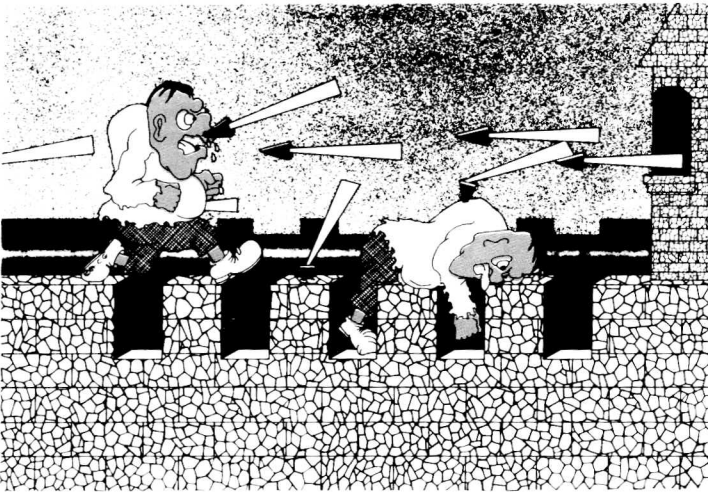
So, while not a standard setting game, Grid Bomb is entertaining and quite addictive. The author has done a good job. The idea is not totally original, but the game is player friendly and well priced.

Originality	★★★
Sound	★★★
Graphics	★★★
Addictiveness	★★★
Value	★★★

HUNCH MAN

Avoiding flying boulders and arrows is the aim of Hunch man, a game derived from the popular arcade game. Mark Shilling is the programmer.

The scenario is simple enough. You have to get your man along a rampart, ducking boulders, jumping holes



M. SHILLING

and avoiding arrows. At the end of the rampart, there is a bell to be rung. You have three lives to start with.

The opening screen gives the controls – cursor left for left, cursor down for right and space for jump. Pressing the space bar starts the action.

Each time you get to the bell, a new screen is displayed and your score updated. The third screen has you using a swinging rope to cross a chasm. After the third screen, you start again at the beginning.

Clearing a screen scores 100 points. Clearing all three gives a bonus of from 0 to 1500 points. The score is displayed at the top of the screen, along with lives remaining.

The listing starts with character redefinition to give the man, arrow, boulder and other characters. The opening page is then programmed, followed by each screen in turn. Atmos owners will have to add one to the first figure in any PLOT statement. Lines 381 to 690 handle movement and consequences.

The TEXT screen is used throughout, and Hunch man ably demonstrates that an amusing game can be written without resorting to HIRES or Machine Code. A logical approach can simplify even the most daunting tasks.

G.B. MAP

How well do you know your geography? This program will test it to the limits, as far as the cities of Great Britain and Ireland are concerned. The author, J. Rafferty, comes from Northern Ireland, hence the number of locations on that portion of the map.

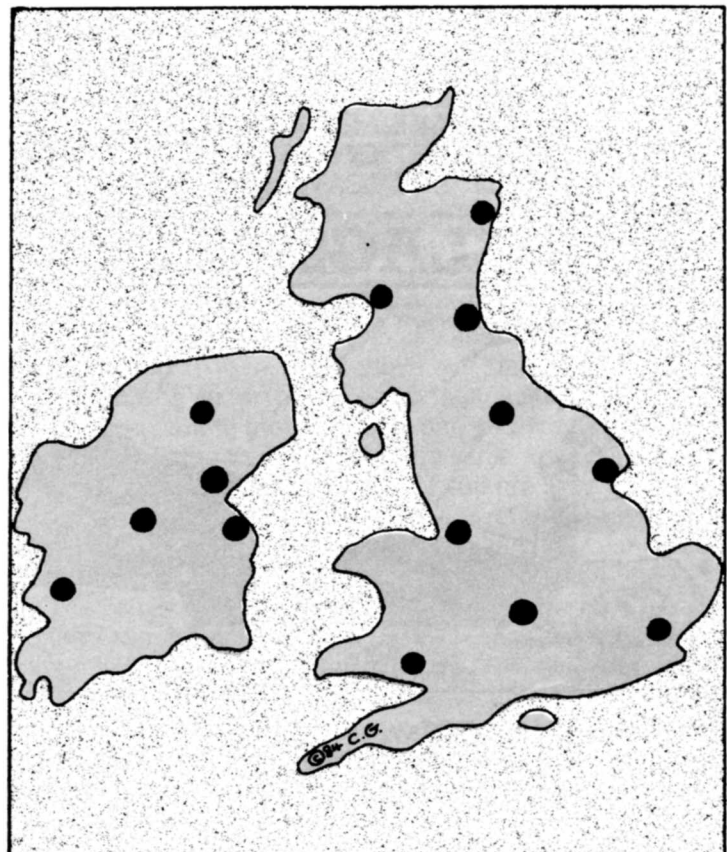
When RUN, a menu is presented. You can choose to display Great Britain, Ireland or both. You can also ask for questions on Great Britain or Ireland.

The display consists of a HIRES map of the country, in green on a black background. A point marking the location of the city flashes, and the name of the city is displayed beneath the map. In the question mode, the location blinks, and you have to input the name of the city. You get twenty questions, for Great Britain, ten for Ireland, picked at random. A final score is given at the end.

New towns can be entered easily enough by entering new DATA lines. You'll need to enter the name of the town and HIRES screen co-ordinates. Wait until the map has been drawn and stop the program by CTRL C. Use the CURSET X,Y,1 to plot the new location, and enter X and Y as the DATA co-ordinates. If you add new towns, remember to amend lines 505, 555, 612 and 622. Also, be careful not to plot a point on the 'coast', or program will crash when the map is drawn.

The program is quite straightforward. Removing line 524 will get rid of the PING. It will work on any 48K or 16K Oric computer. If you or your children want to learn British and Irish geography, it is well worth entering.

J. RAFFERTY



STARSHIP RETREAT

S. W. LUCAS

You are a long, long way from home. Your planet has been decimated by invading Volgranians, and they've stolen ten treasures prized by the race of Aldor. Your task is to recover those treasures.

To that end, you've been dispatched to a remote space station at the outermost limits of the known galaxy. When you docked with the space station, yet more disaster struck, as your space ship was damaged beyond repair. So, after collecting the treasures, you must also find a way of contacting home.

Now it is over to you and your wits. Starship Retreat is the name of the game, and solving all the puzzles posed is not that easy.

All commands are either one or two words. If your Oric does not understand a particular command, you will be informed. Only the initial letter of direction needs to be entered.

We've listed the vocabulary used in the game. It will give some clues to what strategies to adopt. If you get stuck, HELP may give a clue. If you give up, QUIT will end the game. SCORE displays your current score, INVENTORY displays what you are carrying.

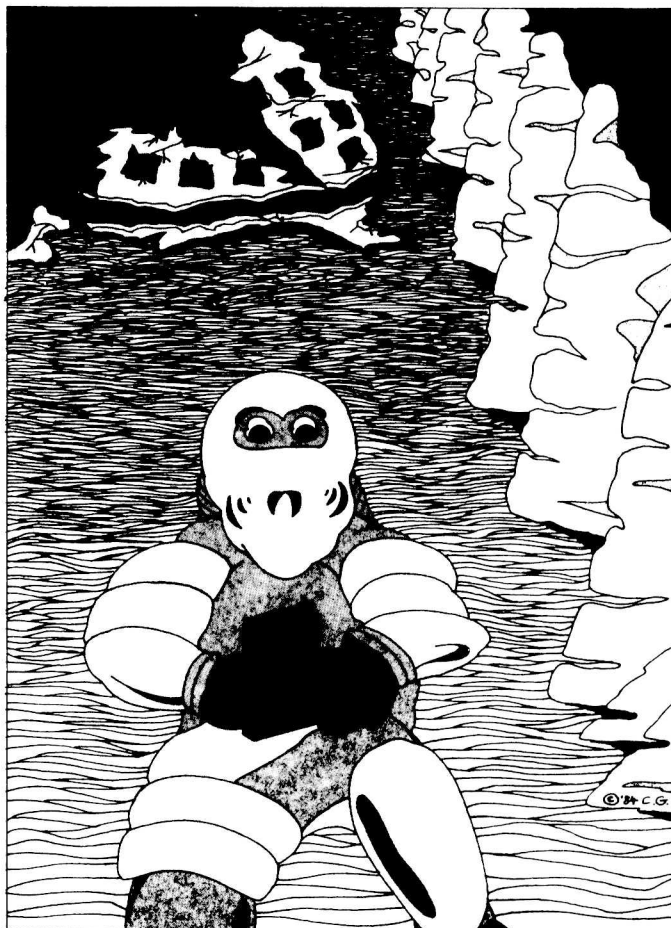
These are some of the treasures to watch out for: gold, jewels, Kryptonite, a log book, a warp transporter crystal, a new ROM (for the Oric!), silicon chips, spices and a statue of Pacman. All the best in your search for them!

Vocabulary

Directions – NORTH, SOUTH, EAST, WEST, UP, DOWN

Special Verbs – HELP, INVENTORY, QUIT, SCORE

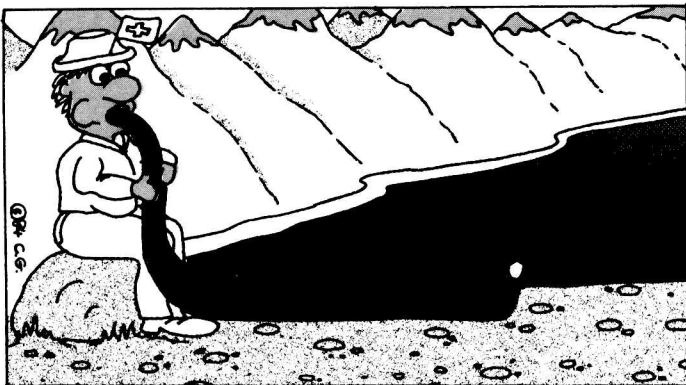
Verbs – ATTACK, BUY, CLIMB, CLOAD, COOK, CRACK, DROP, EAT, GET, GIVE, GO, GRAB, HIT, INSERT, JUMP, KILL, KISS, LEAVE, LOAD, LOOK,



OPEN, PHONE, PRAY, PULL, READ, SEARCH, SMOKE, SWEAR, SWIM, TAKE, THROW, TIME, USE, WEAR

EURO FLAGS

A. GRANT



In Oric Owner April/May, we published a short program that displayed a HIRES Union Jack on the screen. Andy Grant then sent us this program, displaying twenty European flags, selected from a menu.



The countries given are Austria, Belgium, Bulgaria, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Luxembourg, Monaco, Netherlands, Norway, Poland, Spain, Sweden, Switzerland and United Kingdom. The name of the country is displayed below each flag, and each flag is plotted very quickly indeed. We certainly didn't know all the flags in this program.

The Union Jack is not only drawn, but a pretty fair rendition of the National Anthem is given at the end.

The structure of the program is simple enough. Each response to the menu calls a subroutine that draws the flag. More subroutines could easily be added. Attributes are used skillfully to give realistic drawings, and there is even an orange colour on the Irish flag. If you are new to attributes on the HIRES screen, study this program.

CHARACTER REDEFINER

C. CHIN

We've seen many simple character redefiners. This one, from sixteen year old Conrad Chin, is very sophisticated indeed.

When RUN, you first get on-screen instructions. They are quite lengthy and comprehensive. To shorten the listing, they could be omitted.

You are then presented with a six option menu. The options are:

1. Direct entry of numbers
2. Building a character on screen
3. Saving the standard character set
4. Saving the alternate character set
5. Saving both character sets
6. Building a picture.

O ends the program, and ECS gets you out of any option and back to the menu.

For the first two options, you are first asked for the character to be redefined, by key or ASCII code. You can choose standard or alternate characters too. Shift must be used for upper case characters.

Option 1 then displays the character and asks for eight numbers between 0 and 63, one for each row of pixels. The new character is shown as it is created.

If you are happy with the character, you can now store it. If not, you go to option two. This shows a much enlarged character in a grid, with the eight numbers you entered on the side. This character can be altered as you wish. The cursor is moved by the cursor keys. A pixel is set by the space bar, cleared by the DEL key. 1 clears the whole grid, 2 fills the whole grid and 3 goes back to the character you started with. S stores the generated character.

The character saving routines are self explanatory.

Option 6 allows you to combine a number of standard or alternate characters into one unit. A rectangle of five by six characters can be formed. It starts off filled with blank spaces. Position the cursor and use F or B to raise or lower the ASCII code of the character at that location. Shift F or B alters the ASCII code by five. The ASCII code and its character are shown above the grid. Pressing the space bar will plot the character at the cursor position. C switches off the cursor. L clears the square and Q gives a quit.

With all these facilities, you should be able to generate almost any character shape you dream of. This routine is very useful for the games designer, and if that's you, take the trouble to type it in. It is an excellent program.

THREE TOWERS

A. BALDIE



Here's a puzzle for you. It is traditional and will tax your wits. Blame programmer Baldie if you get stuck – the conversion is his work.

The idea is simple enough. You have a pile of seven rings on the leftmost of three towers. You have to transfer these rings to the righthand tower. The problem is that you cannot place a larger ring on top of a smaller ring. If you try to do so, your Oric will zap and the move will not be accepted. You can only move one ring at a time too.

The screen shows the piles of rings. It asks you which tower you want to move a ring from, and which you want to move the ring to. If you give the same tower number to each request, you'll be asked if you are sure that is the move you want to make. Pressing a wrong key gives a zap and an input error message. The only way out of the program is CTRL C or resetting the computer.

The listing is quite short and easy to follow. The meat of the program is from lines 100 to 370. Instructions are given from 1000 on. and the HIRES image drawn from lines 10 to 200. The array A(3,7) holds the positions of the seven rings on the three towers, S and O are variables for the Start and Object towers.

Unfortunately, a solution to the problem was not supplied. If anyone works it out, can we have a look – please!

OTHELLO

N. HEMPSALL

Othello is a game of strategy, a battle of wits between you and the computer. It is an old, old board game, adapted for the screen.

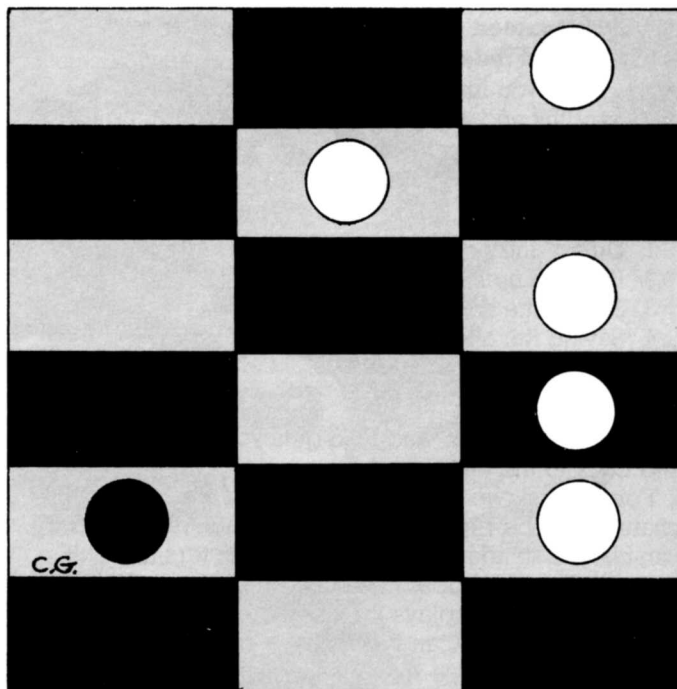
The aim is to end up with more pieces than your opponent. You gain pieces by capturing those of the opponent. Sandwiching a piece or pieces between two of your own captures them, and they change colour.

The game is played on a board of 64 squares. It starts with two of each players' pieces at the centre. You go first, and players take it in turns to place a piece on the board. A piece must be placed next to an opponent's piece. If this isn't possible, press X to miss a go.

There are five levels of difficulty. Pieces are placed by entering the co-ordinates of the square you want to use. Any illegal move will be signalled. A beep prompts your move, a buzz signifies that Oric has moved. Scores are displayed to the right of the grid.

The game continues until all squares are filled. Beware, fortunes can change very rapidly, and the machine plays a very good game.

This program is written for the 48K Oric-1. Conversion to run on the Atmos is simply a matter of adding one to the first figure in any PLOT statement. So, type it in, and find out which is better, man or machine.



RUNEWITER

A. IRWIN



Long, long ago in Middle-Earth there lived fair Elven people. These Elves spoke their own language and they wrote with special letters. These letters were called 'runes'. They were tall, many shaped figures with each 'rune' standing for one or two of our English letters. Today, hardly anyone can understand these 'runes'. Only Elves, Wizards, and Dwarfs are skilled in their use. These folk are hard to find.

Happily, with the aid of modern technology and with grateful thanks to J. R. R. Tolkien who has provided data for the rediscovery of these ancient characters in his books "The Hobbit" and "The Lord of the Rings", the bygone skills are lost no more. With the aid of the program 'RUNEWITER', runes may now be used by all.

Most 'runes' stand for one letter only, but a few stand for two letters. These include 'T' for 'TH' and 'X' for 'NG'.

To have the power of runewriting at your fingertips all you have to do is type in this program and RUN. When asked, the required phrase is entered in English (no more than two lines long to fit in with the line length of your Oric), and Oric will translate that sentence into 'runes'.

After Oric has converted your phrase into runes it will ask you if you want another translation. If so, press 'Y'. Any other key ends the run.

This program accepts all letters, numbers and other characters but commas are recognised by Oric as terminating an input sequence and thus cannot be used in this version.

This program occupies about 12K and was written on any 48K Oric. For 16K Oric models, line 10010 will require changing to the appropriate addresses of the user-defined characters. Good typing and good running.

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HOW TO SUBMIT PROGRAMS

We are always delighted to see your programs for possible publication in Oric Owner. If the program is less than 50 lines long, we will probably consider it a Quickie.

As we are kept busy putting the magazine together, we don't have the time to type in long programs. If you are sending in a long program then, please send it on cassette. To aid correct loading, we would advise CSAVEing two listings, one at the slow data transfer speed.

We have our own printers, to give a printout suitable for use in the magazine. It is therefore not essential that you send a listing for BASIC programs. We must have listings for Machine Code programs though.

If you can include any details on special routines in your programs, or a brief summary of how they run, it would be helpful.

Finally, unless you include a stamped, self addressed envelope, we cannot return any submitted programs, due to the number we receive each week. Make sure you have a copy of your program at home, or enclose a s.a.e. if you want the cassette returned.

OTHELLO

```

1 REM*****
2 REM*****OTHELLO*****
3 REM*****COPYRIGHT*****
4 REM*****N.B. HEMPSALL 1984*****
5 REM*****
10 CLS:INK 4:PAPER 7
20 PRINT:PRINT,,,"OTHELLO"
30 PRINT:PRINT"THIS IS A GAME OF STRA
TEGY AND SKILL."
40 PRINT:PRINT"YOU PLAY BY PLACING YO
UR COUNTER SO"
50 PRINT"THAT YOUR OPPONENT'S COUNTER
S ARE"
60 PRINT"'SANDWICHED' BETWEEN TWO OF
YOUR OWN."
70 PRINT:PRINT"THE 'CAPTURED' COUNTER
S THEN BECOME"
80 PRINT"YOURS. (I WILL DO THAT FOR Y
OU)"
90 PRINT:PRINT "THE FINAL OBJECT OF
THE GAME IS TO"
100 PRINT"END UP WITH MORE COUNTERS O
F YOUR"
110 PRINT"COLOUR THAN YOUR OPPONENTS.
"
112 PRINT:PRINT"YOU PLACE YOUR COUNTE
R BY KEYING THE"
114 PRINT"REFERENCE OF THE SQUARE, LE
TTER FIRST"
116 PRINT"NUMBER SECOND: E.G. 'E3'"
118 PRINT:PRINT"IF YOU CAN'T GO, PRES
S 'X'."
120 PRINT:PRINT"YOU ARE WHITE, AND PL
AY FIRST"
125 PRINT:PRINT      " PRESS ANY KEY
TO CONTINUE"
130 GET Z$
140 CLS
145 GOSUB 3000
147 CLS
150 PRINT:PRINT,,,"GAME LEVEL"
160 PRINT:PRINT:PRINT,,"1...LEVEL 1 (
EASY)"
170 PRINT:PRINT,,"2...LEVEL 2"
180 PRINT:PRINT,,"3...LEVEL 3"
190 PRINT:PRINT,,"4...LEVEL 4"
200 PRINT:PRINT,,"5...LEVEL 5 (HARD)"
210 PRINT:PRINT:PRINT,,"PLEASE SELECT
REQUIRED LEVEL"
220 GET LE$
230 IF VAL(LE$)<1 THEN 220
240 IF VAL(LE$)>5 THEN 220
243 CLS
245 IF S5=1 THEN S5=0:GOTO 250
247 GOSUB 20000
250 GOSUB 19000
260 IF LE$="1" THEN GOSUB 4050
270 IF LE$="2" THEN GOSUB 4040
280 IF LE$="3" THEN GOSUB 4030
290 IF LE$="4" THEN GOSUB 4020
300 IF LE$="5" THEN GOSUB 4010
500 GOSUB 16000:PLOT 28,2,"YOUR TURN"
501 GET A$
502 IF A$="X" THEN Z9=Z9+1:GOTO 732
505 IF A$>"0" THEN IF A$<"I" THEN 507
506 GOTO 500
507 Z9=Z9-1:IF Z9<0 THEN Z9=0
508 PLOT 31,5,A$
510 GET B$
512 IF B$>"0" THEN IF B$<"9" THEN 515
513 GOSUB 16000:GOTO 510
515 PLOT 33,5,B$
520 GOSUB 1000
530 IF B(X,Y)<>0 THEN Z=1:GOSUB 2000:
GOTO 500
680 PLOT P,Q,"lm"
700 PLOT P,Q+1,"no"
720 B(X,Y)=2:PL=2
730 GOSUB 10000:IF S5=1 THEN 742
731 IF I1=0 THEN GOSUB 2000:GOSUB 109
00:GOTO 500
732 PLOT 28,2," "
733 IF Z9=2 THEN GOSUB 11030:GOTO 742
734 PLOT 31,5," ":PLOT 33,5," "
736 PLOT 30,10,"MY TURN"
738 I1=0
740 PL=1:GOSUB 5000: IF Z9
=2 THEN GOSUB 11030:GOTO 742
741 IF S5=0 THEN 750
742 WAIT 400
743 CLS
744 PRINT:PRINT:PRINT:PRINT:PRINT,,"D
O YOU WISH TO PLAY AGAIN?"
745 GET P$
746 IF P$="Y" THEN CLEAR:GOTO 147
747 CLS:END
750 PL=2:A$="":PLOT 30,10," "
760 GOTO 500
1000 IF A$="A" THEN X=1
1010 IF A$="B" THEN X=2
1020 IF A$="C" THEN X=3
1030 IF A$="D" THEN X=4
1040 IF A$="E" THEN X=5
1050 IF A$="F" THEN X=6
1060 IF A$="G" THEN X=7
1070 IF A$="H" THEN X=8
1080 Y=VAL(B$)
1090 P=X*3:Q=(Y*3)-1
1100 RETURN
2000 PLOT 30,10,"ILLEGAL"
2010 PLOT 31,12,"MOVE"
2015 GOSUB 16200

```

OTHELLO

```

2020 WAIT 200
2030 PLOT 30,10,"      "
2040 PLOT 31,12,"      "
2045 IF Z=1 THEN Z=0:RETURN
2050 PLOT P,Q,"      "
2060 PLOT P,Q+1,"      "
2070 PLOT P+1,Q+1,"      "

2080 PLOT P+1,Q,"      "
2090 B(X,Y)=0
2100 RETURN
3000 PRINT:PRINT:PRINT "IF YOU'RE NO
T SURE HOW TO PLAY,"
3010 PRINT:PRINT "SELECT ANY GAME L
EVEL FROM THE NEXT"
3020 PRINT:PRINT "SCREEN, AND PRESS
'X' WHEN IT'S YOUR"
3030 PRINT:PRINT "TURN. THEN WATCH
HOW I DO IT !!!"
3040 PRINT:PRINT:PRINT:PRINT "PRESS
ANY KEY TO CONTINUE"
3050 GET A$
3070 RETURN
4000 REM LEVEL SET UP
4010 H2=24:V2=24:B(8,8)=1:GOSUB 15000
4020 H2=3:V2=3:B(1,1)=1:GOSUB 15000
4030 H2=24:V2=3:B(8,1)=1:GOSUB 15000
4040 H2=3:V2=24:B(1,8)=1:GOSUB 15000
4050 H2=12:V2=12:B(4,4)=1:GOSUB 15000
4060 H2=15:V2=12:B(5,4)=2:GOSUB 14000
4070 H2=12:V2=15:B(4,5)=2:GOSUB 14000
4080 H2=15:V2=15:B(5,5)=1:GOSUB 15000
4090 RETURN
5000 FOR Y=1 TO 8
5010 FOR X=1 TO 8
5020 IF B(X,Y)=0 THEN X1=X:Y1=Y:GOSUB
6000
5040 NEXT X
5050 NEXT Y
5070 GOSUB 7000 'FIND TOP NO
5075 IF T1=0 THEN Z9=Z9+1:RETURN
5080 H2=F1*3:V2=F2*3:B(F1,F2)=1:GOSUB
15000
5090 Z9=Z9-1:IF Z9<0 THEN Z9=0
5100 GOSUB 10000
5110 RETURN
6000 REM VERTICAL DOWN
6010 T=0:IF Y1>6 THEN 6100
6020 FOR A1=Y1+1 TO 8
6030 IF B(X1,A1)=0 THEN 6100
6040 IF B(X1,A1)=1 THEN B1(X,Y)=B1(X,
Y)+T:GOTO 6100
6050 IF B(X1,A1)=2 THEN T=T+1+RND(1)
6060 NEXT A1
6100 REM VERTICAL UP
6110 T=0:IF Y1<3 THEN 6200
6120 FOR A1=Y1-1 TO 1 STEP-1
6130 IF B(X1,A1)=0 THEN 6200
6140 IF B(X1,A1)=1 THEN B1(X,Y)=B1(X,
Y)+T:GOTO 6200
6150 IF B(X1,A1)=2 THEN T=T+1+RND(1)
6160 NEXT A1
6200 REM HORIZ RIGHT
6210 T=0:IF X1>6 THEN 6300
6220 FOR A1=X1+1 TO 8
6230 IF B(A1,Y1)=0 THEN 6300
6240 IF B(A1,Y1)=1 THEN B1(X,Y)=B1(X,
Y)+T:GOTO 6300
6250 IF B(A1,Y1)=2 THEN T=T+1+RND(1)
6260 NEXT A1
6300 REM HORIZ LEFT
6310 T=0:IF X1<3 THEN 6400
6320 FOR A1=X1-1 TO 1 STEP-1
6330 IF B(A1,Y1)=0 THEN 6400
6340 IF B(A1,Y1)=1 THEN B1(X,Y)=B1(X,
Y)+T:GOTO 6400
6350 IF B(A1,Y1)=2 THEN T=T+1+RND(1)
6360 NEXT A1
6400 REM DIAG DOWN RIGHT
6410 T=0:IF Y1>6 THEN 6500
6420 X2=X1+1:IF X1>6 THEN 6500
6430 FOR A1=Y1+1 TO 8
6440 IF B(X2,A1)=0 THEN 6500
6450 IF B(X2,A1)=1 THEN B1(X,Y)=B1(X,
Y)+T:GOTO 6500
6460 IF B(X2,A1)=2 THEN T=T+1+RND(1)
6470 X2=X2+1:IF X2=9 THEN 6500
6480 NEXT A1
6500 REM DIAG DOWN LEFT
6510 T=0:IF Y1>6 THEN 6600
6520 X2=X1-1:IF X1<3 THEN 6600
6530 FOR A1=Y1+1 TO 8
6540 IF B(X2,A1)=0 THEN 6600
6550 IF B(X2,A1)=1 THEN B1(X,Y)=B1(X,
Y)+T:GOTO 6600
6560 IF B(X2,A1)=2 THEN T=T+1+RND(1)
6570 X2=X2-1:IF X2=0 THEN 6600
6580 NEXT A1
6600 REM DIAG UP RIGHT
6610 T=0:IF Y1<3 THEN 6700
6620 X2=X1+1:IF X1>6 THEN 6700
6630 FOR A1=Y1-1 TO 1 STEP-1
6640 IF B(X2,A1)=0 THEN 6700
6650 IF B(X2,A1)=1 THEN B1(X,Y)=B1(X,
Y)+T:GOTO 6700
6660 IF B(X2,A1)=2 THEN T=T+1+RND(1)
6670 X2=X2+1:IF X2=9 THEN 6700
6680 NEXT A1
6700 REM DIAG UP LEFT
6710 T=0:IF Y1<3 THEN 6790
6720 X2=X1-1:IF X1<3 THEN 6790
6730 FOR A1=Y1-1 TO 1 STEP-1

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OTHELLO

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6740 IF B(X2,A1)=0 THEN 6790
6750 IF B(X2,A1)=1 THEN B1(X,Y)=B1(X,
Y)+T:GOTO 6790
6760 IF B(X2,A1)=2 THEN T=T+1+RND(1)
6770 X2=X2-1:IF X2=0 THEN 6790
6780 NEXT A1
6790 RETURN
7000 REM FIND TOP NO
7010 F1=0:F2=0
7015 T1=0
7020 FOR N=1 TO 8
7030 FOR N1=1 TO 8
7040 IF B1(N,N1)>T1 THEN T1=B1(N,N1):
F1=N:F2=N1
7070 NEXT N1
7080 NEXT N
7090 IF T1>0 THEN GOSUB 16100
7100 FOR N=1 TO 8
7110 FOR N1=1 TO 8
7120 B1(N,N1)=0
7130 NEXT N1
7140 NEXT N
7150 RETURN
10000 REM CHANGE PIECES
10010 IF PL=2 THEN H=X:V=Y
10020 IF PL=1 THEN H=F1:V=F2
10100 IF V>6 THEN 10200 'VERTICAL D
OWN
10110 FOR C=V+1 TO 8
10120 IF B(H,C)=0 THEN 10200
10130 IF B(H,C)<>PL THEN 10150
10140 V1=C:GOSUB 12000:GOTO 10200
10150 NEXT C
10200 IF V<3 THEN 10300 'VERTICAL U
P
10210 FOR C=V-1 TO 1 STEP-1
10220 IF B(H,C)=0 THEN 10300
10230 IF B(H,C)<>PL THEN 10250
10240 V1=C:GOSUB 12100:GOTO 10300
10250 NEXT C
10300 IF H>6 THEN 10400 'HORIZON RI
GHT
10310 FOR C=H+1 TO 8
10320 IF B(C,V)=0 THEN 10400
10330 IF B(C,V)<>PL THEN 10350
10340 H1=C:GOSUB 12200:GOTO 10400
10350 NEXT C
10400 IF H<3 THEN 10500 'HORIZON LE
FT
10410 FOR C=H-1 TO 1 STEP-1
10420 IF B(C,V)=0 THEN 10500
10430 IF B(C,V)<>PL THEN 10450
10440 H1=C:GOSUB 12300:GOTO 10500
10450 NEXT C
10500 IF H>6 THEN 10600 'DIAG DOWN
RIGHT
10510 C1=V+1:IF V>6 THEN 10600
10520 FOR C=H+1 TO 8
10530 IF B(C,C1)=0 THEN 10600
10540 IF B(C,C1)<>PL THEN 10560
10550 H1=H:V1=C1:GOSUB 12400:GOTO 106
00
10560 C1=C1+1:IF C1=9 THEN 10600
10570 NEXT C
10600 IF H>6 THEN 10700 'DIAG UP RI
GHT
10610 C1=V-1:IF V<3 THEN 10700
10620 FOR C=H+1 TO 8
10630 IF B(C,C1)=0 THEN 10700
10640 IF B(C,C1)<>PL THEN 10660
10650 H1=H:V1=C1:GOSUB 12500:GOTO 107
00
10660 C1=C1-1:IF C1=0 THEN 10700
10670 NEXT C
10700 IF H<3 THEN 10800 'DIAG DOWN
LEFT
10710 C1=V+1:IF V>6 THEN 10800
10720 FOR C=H-1 TO 1 STEP-1
10730 IF B(C,C1)=0 THEN 10800
10740 IF B(C,C1)<>PL THEN 10760
10750 H1=H:V1=C1:GOSUB 12600:GOTO 108
00
10760 C1=C1+1:IF C1=9 THEN 10800
10770 NEXT C
10800 IF H<3 THEN 10900 'DIAG UP LE
FT
10810 C1=V-1:IF V<3 THEN 10900
10820 FOR C=H-1 TO 1 STEP-1
10830 IF B(C,C1)=0 THEN 10900
10840 IF B(C,C1)<>PL THEN 10860
10850 H1=H:V1=C1:GOSUB 12700:GOTO 109
00
10860 C1=C1-1:IF C1=0 THEN 10900
10870 NEXT C
10900 S3=0:S4=0
10910 FOR S1=1 TO 8
10920 FOR S2=1 TO 8
10930 IF B(S1,S2)=2 THEN S3=S3+1
10940 IF B(S1,S2)=1 THEN S4=S4+1
10950 NEXT S2
10960 NEXT S1
10970 S3$=STR$(S3):S4$=STR$(S4)
10980 IF S3+S4=64 THEN S5=1
10982 IF S3=0 THEN S5=1
10984 IF S4=0 THEN S5=1
10990 PLOT 31,18,"SCORE"
11000 PLOT 28,20,"WHITE":PLOT 34,20,"
BLACK"
11005 PLOT 27,22,""
11010 PLOT 29,22,S3$:PLOT 34,22,S4$

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OTHELLO

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11020 IF S5=0 THEN RETURN
11030 PLOT 29,13,"GAME OVER":GOSUB 16
200
11040 IF S3 > S4 THEN PLOT
30,15,"YOU WIN"
11050 IF S4 > S3 THEN PLOT
31,15,"I WIN"
11060 IF S3=S4 THEN PLOT 30,15,"A DRA
W?"
11070 RETURN
12000 I=0
12005 FOR D=V TO V1
12010 V2=D*3:H2=H*3:B(H,D)=PL
12020 IF PL=2 THEN GOSUB 14000:GOTO 1
2040
12030 IF PL=1 THEN GOSUB 15000
12040 NEXT D
12050 RETURN
12100 I=0
12105 FOR D=V TO V1 STEP-1
12110 V2=D*3:H2=H*3:B(H,D)=PL
12120 IF PL=2 THEN GOSUB 14000:GOTO 1
2140
12130 IF PL=1 THEN GOSUB 15000
12140 NEXT D
12150 RETURN
12200 I=0
12205 FOR D=H TO H1
12210 V2=V*3:H2=D*3:B(D,V)=PL
12220 IF PL=2 THEN GOSUB 14000:GOTO 1
2240
12230 IF PL=1 THEN GOSUB 15000
12240 NEXT D
12250 RETURN
12300 I=0
12305 FOR D=H TO H1 STEP-1
12310 V2=V*3:H2=D*3:B(D,V)=PL
12320 IF PL=2 THEN GOSUB 14000:GOTO 1
2340
12330 IF PL=1 THEN GOSUB 15000
12340 NEXT D
12350 RETURN
12400 I=0
12405 FOR D=V TO V1
12410 V2=D*3:H2=H1*3:B(H1,D)=PL
12420 IF PL=2 THEN GOSUB 14000:GOTO 1
2435
12430 IF PL=1 THEN GOSUB 15000
12435 H1=H1+1
12440 NEXT D
12450 RETURN
12500 I=0
12505 FOR D=V TO V1 STEP-1
12510 V2=D*3:H2=H1*3:B(H1,D)=PL
12520 IF PL=2 THEN GOSUB 14000:GOTO 1
2535
12530 IF PL=1 THEN GOSUB 15000
12535 H1=H1+1
12540 NEXT D
12550 RETURN
12600 I=0
12605 FOR D=V TO V1
12610 V2=D*3:H2=H1*3:B(H1,D)=PL
12620 IF PL=2 THEN GOSUB 14000:GOTO 1
2635
12630 IF PL=1 THEN GOSUB 15000
12635 H1=H1-1
12640 NEXT D
12650 RETURN
12700 I=0
12705 FOR D=V TO V1 STEP-1
12710 V2=D*3:H2=H1*3:B(H1,D)=PL
12720 IF PL=2 THEN GOSUB 14000:GOTO 1
2730
12725 IF PL=1 THEN GOSUB 15000
12730 H1=H1-1
12740 NEXT D
12750 RETURN
14000 PLOT H2,V2-1,"lm"
14020 PLOT H2 ,V2,"no"
14040 I=I+1:IF I=3 THEN I1=1
14050 RETURN
15000 IF H2<1 THEN RETURN
15005 IF V2<2 THEN RETURN
15010 PLOT H2,V2-1,"hi"
15020 PLOT H2,V2,"jk"
15040 RETURN
16000 PLAY 1,0,0,0
16010 MUSIC 1,5,1,6
16020 WAIT 50
16030 PLAY 0,0,0,0
16040 RETURN
16100 PLAY 1,0,0,0
16110 MUSIC 1,1,5,8
16120 WAIT 50
16130 PLAY 0,0,0,0
16140 RETURN
16200 FOR R=1 TO 5
16205 PLAY 1,0,0,0
16210 MUSIC 1,1,7,7
16220 WAIT 15
16230 PLAY 0,0,0,0
16240 PLAY 1,0,0,0
16250 MUSIC 1,5,7,7
16260 WAIT 15
16270 PLAY 0,0,0,0
16280 NEXT
16290 RETURN
19000 REM SET UP BOARD
19010 PRINT" A B C D E F G H"

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OTHELLO

```

19020 PRINT" pbb fbb fbb fbb fbb fbb fbb fbb
q
19030 PRINT"1c c c c c c c c c
c
19040 PRINT" c c c c c c c c c
c
19050 PRINT" dbbabbabbabbabbabbabbabb
e
19060 PRINT"2c c c c c c c c c
c
19070 PRINT" c c c c c c c c c
c
19080 PRINT" dbbabbabbabbabbabbabbabb
e
19090 PRINT"3c c c c c c c c c
c
19100 PRINT" c c c c c c c c c
c
19110 PRINT" dbbabbabbabbabbabbabbabb
e
19120 PRINT"4c c c c c c c c c
c
19130 PRINT" c c c c c c c c c
c
19140 PRINT" dbbabbabbabbabbabbabbabb
e
19150 PRINT"5c c c c c c c c c
c
19160 PRINT" c c c c c c c c c
c
19170 PRINT" dbbabbabbabbabbabbabbabb
e
19180 PRINT"6c c c c c c c c c
c
19190 PRINT" c c c c c c c c c
c
19200 PRINT" dbbabbabbabbabbabbabbabb
e
19210 PRINT"7c c c c c c c c c
c
19220 PRINT" c c c c c c c c c
c
19230 PRINT" dbbabbabbabbabbabbabbabb
e
19240 PRINT"8c c c c c c c c c
c
19250 PRINT" c c c c c c c c c
c
19260 PRINT" rbbgbbgbbgbbgbbgbbgbbgbb
s
19270 FOR X=1 TO 8
19280 FOR Y=1 TO 8
19290 B(X,Y)=0
19300 NEXT Y
19310 NEXT X
19320 RETURN
20000 REM CHARACTERS
20010 FOR A=(46080+(ASC("a")*8)) TO (
46080+(ASC("s")*8)+7)
20020 READ US:POKE A,US:NEXT:RETURN
20030 DATA 4,4,4,4,63,4,4,4
20040 DATA 0,0,0,0,63,0,0,0
20050 DATA 4,4,4,4,4,4,4,4
20060 DATA 4,4,4,4,7,4,4,4
20070 DATA 4,4,4,4,60,4,4,4
20080 DATA 0,0,0,0,63,4,4,4
20090 DATA 4,4,4,4,63,0,0,0
20100 DATA 0,0,3,15,31,31,63,63
20110 DATA 0,0,48,60,62,62,63,63
20120 DATA 63,63,31,31,15,3,0,0
20130 DATA 63,63,62,62,60,48,0,0
20140 DATA 0,0,3,8,16,16,32,32
20150 DATA 0,0,48,4,2,2,1,1
20160 DATA 32,32,16,16,8,3,0,0
20170 DATA 1,1,2,2,4,48,0,0
20180 DATA 0,0,0,0,7,4,4,4
20190 DATA 0,0,0,0,60,4,4,4
20200 DATA 4,4,4,4,7,0,0,0
20210 DATA 4,4,4,4,60,0,0,0

```

G.B. MAP

```

10 PAPER 0: INK3 : CLS
11 TEXT
12 PRINT
14 PRINT TAB(23);CHR$(27);"JBRITISH IS
LES"
15 PRINT TAB(23);CHR$(27);"JBRITISH IS
LES"
16 PRINT:PRINT
20 PRINT TAB(23);CHR$(27);"LCHOOSE OPT
ION"
22 PRINT:PRINT
24 PRINT" 1 DISPLAY GT.BRITAIN"
26 PRINT" 2 DISPLAY IRELAND"
28 PRINT" 3 DISPLAY BOTH"
30 PRINT" 4 QUESTIONS: GB. ONLY
32 PRINT" 5 QUESTIONS: IRL ONLY

```


G.B. MAP

```

34 PRINT " 6 END"
60 PRINT:PRINT:PRINT
62 INPUT"WHICH DO YOU WANT ";C
70 IF C=6 THEN GOTO 1000
90 HIRES
95 PAPER0:INK3
100 CURSET 1,0,1,1
110 REPEAT
120 READ A,3
140 DRAW A,B,1
150 UNTIL A=-.1
160 DATA 1,5,-15,17,8,-2,-10,8,13,-6,2
0,0,-10,23,-5,5,4,3,-2,3,-9,4
162 DATA 10,0,8,3,7,7,2,11,4,9,8,3,8,9
,-2,2,4,9,-4,0,5,3,2,7,-4,5,5,2
164 DATA2,-4,10,0,5,8,0,15,-10,5,2,2,-
7,4,13,2,0,3,-7,4,0,2,-9,5,-7,-2
166 DATA -10,2,-5,-2,-3,3,-4,0,0,3,-8,
-1,0,2,-6,-3,-8,2,-2,9,-8,-2
168 DATA-11,2,-2,5,-5,-3,-3,2,-2,-1,3,
-2,2,1,13,-15,0,-5,3,0,2,-2
170 DATA0,-2,8,-2,4,2,12,-10,-11,4,0,2
,-4,0,-5,-4,-5,2,-1,-1,3,-2,0,-2
172 DATA -4,-2,-8,5,-4,-3,2,-2,-2,-2,1
6,-10,0,-13,-6,3,-2,-1,11,-10,6,0
173 DATA 4,2,-2,-3
174 DATA 2,-1,3,2,-3,-4,3,-4,
-3,0,0,-4,4,-8,-4,3
175 DATA-7,-11,4,-10
176 DATA-2,0,-7,5,-4,-2,-1,3,-6,-3,0,5
,-4,-6,1,-1,2,2,-1,-5,6,-9,-4,-5
178 DATA 2,-5,-6,0,-4,10,-2,-1,6,-25,-
12,7,10,-24,-5,-10
180 DATA 10,-16,25,-4
190 DATA -.1,0
200 CURSET 40,160,1
210 REPEAT
220 READ A,B
230 WAIT 5
240 DRAW A,B,1
250 UNTIL A= -.1
255 RESTORE
260 DATA 4,-7,-8,2,6,-5,-8,2,-2,-3,8,-
6,-10,0,0,-3,10,0,0,-4,8,-2,-8,0
262 DATA 8,-13,4,0,0,-3,-8,0,-8,-3,6,-
3,0,-4,3,0,0,-2,-3,0,0,-10,8,0,2,2
264 DATA1,-2,7,0,-2,-2,7,-5,-5,1,-3,-3
,3,-3,3,-7,8,-2,3,5,3,-7,4,3,-3,3
266 DATA6,-3,6,-1,5,11,-2,5,5,-2,2,6,-
3,-2,2,3,-4,2,-2,5,-3,-1,2,2,-3,0,0,2
268 DATA3,8,-2,5,3,7,-7,15,3,3,-17,0,-
11,7,-1,-2,0,3,-19,7
270 DATA -.1,0
275 CURSET 95,30,0:CIRCLE 3,1
280 CURSET 156,181,0:CIRCLE 2,1
285 CURSET 110,100,0:CIRCLE 3,1
290 CURSET 113,122,0:CIRCLE 3,1
295 CURSET 80,25,0:CIRCLE 3,1
300 CURSET 92,5,1
305 DRAW-5,12,1:DRAW-4,3,1
310 DRAW -3,-8,1:DRAW 12,-7,1
398 :
399 :
410 ON C GOTO500,550,500,600,650
498 :
499 :
500 REM ***** DISPLAY GT.BRITAIN *
505 FOR U=701TO737
510 GOSUB U
512 PRINT:PRINT:PRINT
514 PRINT" ";A$
520 FOR W=1 TO 5
522 CURSET A,B,1:CIRCLE 3.5,1
524 WAIT 40 :PING
526 CURSET A,B,1:CIRCLE 3.5,0
528 WAIT 10
530 NEXT
535 NEXT
540 IF C<2 THEN GOTO10
550 REM ***** DISPLAY IRELAND ****
555 FOR U=801TO818
560 GOSUB U
562 PRINT:PRINT:PRINT
564 PRINT" ";A$
570 FOR W=1 TO 5
572 CURSET A,B,1:CIRCLE 3.5,1
574 WAIT 40 :PING
576 CURSET A,B,1:CIRCLE 3.5,0
578 WAIT 10
580 NEXT
590 NEXT
595 IF C<4 THEN GOTO10
600 REM ** QUESTIONS GB *****
610 FOR Q=1 TO 20
612 : L=INT(RND(1)*37)+701
614 : GOSUB L
615 IF POINT(A,B)<>0 THEN 612
616 PRINT:PRINT:PRINT
618 FOR W=1 TO 5
620 CURSET A,B,1:CIRCLE 3.5,1
622 WAIT 40 :PING
624 CURSET A,B,1:CIRCLE 3.5,0
626 WAIT 10
628 NEXT
630 CURSET A,B,1:CIRCLE 3.5,1
631 PRINT" QUESTION ";Q;
632 INPUT N$
635 IF N$<>A$ THEN 640
637 PRINT" CORRECT":RT=RT+1
638 WAIT 200
639 GOTO644

```

G.B. MAP

```

640 PRINT:PRINT:PRINT:PRINT"  WRONG: T
HE ANSWER IS ";A$
641 WAIT 500
644 CURSET A,B,1:CIRCLE 3.5,0
645 NEXT Q
649 GOTO 900
650 REM ** QUESTIONS IRL *****
660 FOR Q=1 TO 10
662 : L=INT(RND(1)*18)+801
664 : GOSUB L
665 IF POINT(A,B)<>0 THEN 662
666 PRINT:PRINT:PRINT
668 FOR W=1 TO 5
670 CURSET A,B,1:CIRCLE 3.5,1
672 WAIT 40 :PING
674 CURSET A,B,1:CIRCLE 3.5,0
676 WAIT 10
678 NEXT
680 CURSET A,B,1:CIRCLE 3.5,1
681 PRINT"  QUESTION ";Q;
682 INPUT N$
685 IF N$<>A$ THEN 690
687 PRINT"          CORRECT":RT=RT+1

688 WAIT 200
689 GOTO692
690 PRINT:PRINT:PRINT:PRINT"  WRONG: T
HE ANSWER IS ";A$
691 WAIT 500
692 CURSET A,B,1:CIRCLE 3.5,0
695 NEXT Q
699 GOTO900
701 A=147:B=140:A$="BIRMINGHAM":RETURN
702 A=143:B=119:A$="MANCHESTER":RETURN
703 A=134:B=120:A$="LIVERPOOL":RETURN
704 A=131:B=129:A$="WREXHAM":RETURN
705 A=136:B=113:A$="PRESTON":RETURN
706 A=160:B=175:A$="PORTSMOUTH":RETURN
707 A=154:B=173:A$="SOUTHAMPTON":RETUR
N
708 A=125:B=180:A$="EXETER":RETURN
709 A=115:B=186:A$="PLYMOUTH":RETURN
710 A=117:B=171:A$="BARNSTAPLE":RETURN
711 A=139:B=162:A$="BRISTOL":RETURN
712 A=132:B=159:A$="NEWPORT":RETURN
713 A=128:B=161:A$="CARDIFF":RETURN
714 A=120:B=158:A$="SWANSEA":RETURN
715 A=142:B=155:A$="GLOUCESTER":RETURN
716 A=154:B=92:A$="MIDDLESBOROUGH":RET
URN
717 A=150:B=83:A$="NEWCASTLE":RETURN
718 A=132:B=62:A$="EDINBURGH":RETURN
719 A=115:B=65:A$="GLASGOW":RETURN
720 A=112:B=73:A$="AYR":RETURN
721 A=108:B=41:A$="FORT WILLIAM":RETUR
N

```

```

722 A=115:B=31:A$="INVERNESS":RETURN
723 A=132:B=49:A$="DUNDEE":RETURN
724 A=126:B=50:A$="PERTH":RETURN
725 A=141:B=33:A$="ABERDEEN":RETURN
726 A=168:B=112:A$="HULL":RETURN
727 A=155:B=105:A$="YORK":RETURN
728 A=152:B=110:A$="LEEDS":RETURN
729 A=154:B=120:A$="SHEFFIELD":RETURN
730 A=177:B=133:A$="KINGS LYNN":RETURN
731 A=190:B=134:A$="NORWICH":RETURN
732 A=176:B=144:A$="CAMBRIDGE":RETURN
733 A=172:B=159:A$="LONDON":RETURN
734 A=156:B=156:A$="OXFORD":RETURN
735 A=189:B=166:A$="DOVER":RETURN
736 A=171:B=173:A$="BRIGHTON":RETURN
737 A=132:B=85:A$="CARLISLE":RETURN
801 A=84:B=142:A$="WEXFORD":RETURN
802 A=75:B=143:A$="WATERFORD":RETURN
803 A=58:B=148:A$="CORK":RETURN
804 A=44:B=145:A$="KILLARNEY":RETURN
805 A=42:B=142:A$="TRALEE":RETURN
806 A=55:B=133:A$="LIMERICK":RETURN
807 A=51:B=117:A$="GALWAY":RETURN
808 A=61:B=99:A$="SLIGO":RETURN
809 A=65:B=117:A$="ATHLONE":RETURN
810 A=66:B=89:A$="DONEGAL":RETURN
811 A=78:B=82:A$="DERRY":RETURN
812 A=93:B=93:A$="BELFAST":RETURN
813 A=81:B=95:A$="DUNGANNON":RETURN
814 A=87:B=96:A$="PORTADOWN":RETURN
815 A=85:B=98:A$="ARMAGH":RETURN
816 A=89:B=102:A$="NEWRY":RETURN
817 A=86:B=106:A$="DUNDALK":RETURN
818 A=88:B=120:A$="DUBLIN":RETURN
898 :
899 :
900 REM ***** SCORES *****
905 TEXT
910 FOR R=1TO11:PRINT:NEXT
920 PRINT TAB(22);CHR$(27);"ENTER YOU
R NAME"
921 PRINT TAB(22);CHR$(27);"ENTER YOU
R NAME"
925 PRINT:PRINT:PRINT:PRINT
930 INPUT " ";M$
940 CLS:FORR=1TO8:PRINT:NEXT
950 IF RT>Q*1/2 THEN955
952 PRINT TAB(20);"HARD LUCK, ";M$:GOT
0960
959 PRINT TAB(20);"EXCELLENT, ";M$
960 PRINT:PRINT:PRINT"  YOU SCORED ";R
T;" OUT OF ";Q-1
980 RT=0:Q=0
990 WAIT 500: GOTO 10
1000 CLS:END

```

HUNCH MAN

```

2 REM HUNCH MAN
5 PAPER0:INK1:POKE 48035,0
10 CLS:POKE 618,10:X=1:Y=16:A=36:B=15
:XX=310:D=0
11 FOR I=46592 TO 46599
13 READ A:POKE I,A:NEXT I
15 DATA 119,119,119,119,119,119,119,0
20 FOR I=46384 TO 46391
30 READ A:POKE I,A:NEXT I
40 DATA 12,30,30,30,63,63,12,0
50 FOR I=46376 TO 46383
60 READ A:POKE I,A:NEXT I
70 DATA 62,62,62,62,62,62,62,0
80 FOR I=46840 TO 46847
90 READ A:POKE I,A:NEXT I
100 DATA 31,21,31,4,31,4,10,17
110 FOR I=46360 TO 46367
120 READ A:POKE I,A:NEXT I
130 DATA 31,21,31,4,31,4,10,10
140 FOR I=46824 TO 46831
150 READ A:POKE I,A:NEXT I
160 DATA 0,30,126,30,123,30,60,16
165 IF D=50 THEN GOTO 310
180 PRINT CHR$(12)
190 PRINT CHR$(4);CHR$(27);"J
      HUNCH MAN"
200 PRINT CHR$(4)
210 PRINT "                by"
215 PRINT "          J.Mark Shilling"
220 PRINT:PRINT
230 PRINT "          +CONTROLS+"
240 PRINT "          LEFT...CURSOR LEFT
"
250 PRINT "          RIGHT...CURSOR DOWN
"
260 PRINT "          JUMP....SPACE BAR"
270 PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT
280 PRINT CHR$(4);CHR$(27);"J
      PRESS SPACE"
290 PRINT CHR$(4)
291 PLOT 0,1,4:PLOT 0,2,7
300 REPEAT:UNTIL PEEK(520)=132
305 CLS:HM=3:NM=310:NS=660
306 NM=310:NS=660
310 PRINT "HUNCH MEN          SCORE
"
320 PRINT "  ";HM;"          ";SC
330 PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT
331 PRINT "
      &"
332 PRINT "
      ;"
333 PRINT "
      ;"

334 PRINT
340 PRINT "xxxxxxxx x x x x x x x x
x xxxxxxxx"
350 PRINT "oooooooooooooooooooooooooooooooo
oooooooooooo"
360 PRINT "xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxx"
370 PRINT "oooooooooooooooooooooooooooooooo
oooooooooooo"
375 PLOT 0,16,4
376 PLOT 0,15,4
377 FOR CC=0 TO 500
380 PLOT X,Y,"#"
381 IF X=9 AND Y=16 OR X=11 AND Y=16
OR X=13 AND Y=16 THEN10000
382 IF X=15AND Y=16 OR X=17 AND Y=16
OR X=19 AND Y=16 THEN10000
383 IF X=21AND Y=16 OR X=23 AND Y=16
OR X=25 AND Y=16 THEN10000
384 IF X=27 AND Y=16 OR X=29 ANDY=16
THEN 10000
390 IF PEEK(#301)=223 THEN 490
392 IF X>36 THEN GOTO NS
400 IF PEEK(#301)=191 THEN 450
410 IF KEY$=" " THEN 540
415 IF X>36 THEN GOTO NS
416 IF A<1 THEN PLOT A,B," ":A=36:PLO
T 0,16,4:PLOT 0,15,4
417 PLOT A,B," "
418 A=A-1
419 IF A<1 THEN PLOT A,B," ":A=36:PLO
T 0,16,4:PLOT 0,15,4
420 PLOT A,B,"]"
430 IF X=A AND Y=B THEN 10000
440 GOTO 380
450 PLOT X,Y," ":SOUND 1,60,10:SOUND1
,0,0
451 IF A<1 THENPLOTA,B," ":A=36:PLOT
0,16,4:PLOT 0,15,4
455 PLOT A,B," "
460 X=X+1:A=A-1:IF A<1 THENPLOTA,B,"
":A=36:PLOT 0,16,4:PLOT 0,15,4
470 PLOT X,Y,"_"
471 IF A<1 THENPLOTA,B," ":A=36
472 PLOT A,B,"]"
473 WAIT 10
475 IF X=A AND Y=B THEN 10000
480 GOTO 380
490 PLOT X,Y," ":SOUND1,60,10:SOUND 1
,0,0
491 IF A<1 THEN PLOT A,B," ":A=36:PLO
T 0,16,4:PLOT 0,15,4
495 PLOT A,B," "
500 X=X-1:A=A-1
510 PLOT X,Y,"_" :PLOT A,B,"]"
520 WAIT 10

```


HUNCH MAN

```

530 GOTO 380
540 PLOT X,Y," "
541 IF A<1 THEN PLOT A,B," ":A=36:PLO
T 0,16,4:PLOT 0,15,4
542 IF X>36 THEN GOTO NS
545 PLOT A,B," "
550 Y=Y-1:A=A-1
555 X=X+1
560 PLOT X,Y,"_"
561 IF A<1 THEN PLOT A,B," ":A=36:PLO
T 0,16,4:PLOT 0,15,4
565 PLOT A,B,"J":SOUND 1,225,10:WAIT5
:SOUND 1,0,0
570 WAIT 10
580 PLOT X,Y," "
600 PLOT X,Y,"_"
610 WAIT10
620 PLOT X,Y," "
625 IF A=X AND B=Y THEN 10000
630 X=X+1
640 Y=Y+1
645 IF A=X AND B=Y THEN 10000
650 GOTO 380
660 PING:WAIT15:PING:X=1:NM=695:IFD=5
0THEN 670
661 FOR I=46824 TO 46831
662 READ A:POKE I,A:NEXT I
663 DATA 0,0,0,17,62,17,0,0
670 SC=SC+100:A=13:B=16:NS=800
690 WAIT 300
695 PRINT "HUNCH MEN          SCORE "

700 PRINT " ";HM;"          ";S
C
710 PRINT:PRINT:PRINT:PRINT:PRINT:PRI
NT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT
720 PRINT "
      &"
730 PRINT "
      |"
740 PRINT "
      |"
750 PRINT "
      |"

760 PRINT "xxxxxxxx x x x x x x x x
x xxxxxxxx"
770 PRINT "000000000000000000000000
000000000000"
780 PRINT "xxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxx"
790 PRINT "000000000000000000000000
000000000000"
795 PRINT:PRINT:PRINT:PRINT:PRINT
796 GOTO 380
800 PING:WAIT10:PING:SC=SC+100:A=13:B
=11:X=1:Y=17:NM=810:G=1

810 PRINT"HUNCH MEN          S
CORE"
815 PRINT" ";HM;"
      ";SC
820 PRINT:PRINT:PRINT:PRINT:PRINT:PRI
NT:PRINT:PRINT:PRINT:PRINT:PRINT
830 PRINT"
      &"
840 PRINT"
      |"
850 PRINT"
      |"
860 PRINT
870 PRINT "xxxxxxxxxxxxx          x
xxxxxxxxxxxxx"
880 PRINT"@000000000000          @@
000000000000"
890 PRINT"xxxxxxxxxxxxx          xx
xxxxxxxxxxxxx"
900 PRINT"@000000000000000000000000
000000000000"
910 PRINT:PRINT:PRINT:PRINT
920 PLOT A,B," "
925 PLOT 0,Y,4
930 PLOT A,B+1," "
940 PLOT A,B+2," "
950 PLOT A,B+3," "
960 PLOT A,B+4," "
970 PLOT X,Y,"#"
980 IF PEEK(#301)=223 THEN 1200
990 IF PEEK(#301)=191 THEN 1160
1000 IF KEY$=" " THEN 1270
1010 IF X>36 THEN 20000
1020 A=A+1
1030 IF A>24 THEN A=A-13
1040 PLOT A,B,"|"
1050 PLOT A,B+1,"|"
1060 PLOT A,B+2,"|"
1070 PLOT A,B+3,"|"
1080 PLOT A,B+4,"|"
1090 PLOT X,Y,"#"
1140 IF X>36 THEN GOTO NS
1150 IF X>11 AND X<26 THEN 10000
1155 GOTO920
1160 PLOT X,Y," "
1161 PLOTA,B," "
1162 PLOTA,B+1," "
1163 PLOTA,B+2," "
1164 PLOT A,B+3," "
1165 PLOT A,B+4," "
1166 IF X>36 THEN GOTO 20000
1170 X=X+1:A=A+1:SOUND1,60,10:SOUND 1
,0,0
1175 IF X>11AND X<26 THEN 10000
1180 WAIT 10:IF X=A AND Y=B THEN 1100
0

```

HUNCH MAN

```

1181 PLOT X,Y,"_"
1182 PLOTA,B,"|"
1183 PLOTA,B+1,"|"
1184 PLOTA,B+2,"|"
1185 PLOT A,B+3,"|"
1186 PLOT A,B+4,"|"
1190 GOTO 920
1200 PLOT X,Y," "
1201 PLOT A,B," "
1202 PLOTA,B+2," "
1203 PLOT A,B+3," "
1204 PLOT A,B+4," "
1220 X=X-1:A=A+1:SOUND 1,60,10:SOUND
1,0,0
1230 IF X>11 AND X<26 THEN 10000
1240 PLOT X,Y,"_"
1241 PLOTA,B,"|"
1242 PLOTA,B+1,"|"
1243 PLOTA,B+2,"|"
1244 PLOT A,B+3,"|"
1246 PLOT A,B+4,"|"
1250 WAIT 10
1260 GOTO 920
1270 PLOT X,Y," "
1271 PLOTA,B," "
1272 PLOTA,B+1," "
1273 PLOTA,B+2," "
1274 PLOT A,B+3," "
1275 PLOT A,B+4," "
1276 IF X>36 THEN GOTO 20000
1280 Y=Y-1:X=X+2:A=A+1:SOUND 1,225,10
:WAIT 5:SOUND 1,0,0
1285 IF A>25 THEN A=A-14
1290 PLOT X,Y,"_"
1291 PLOTA,B,"|"
1292 PLOTA,B+1,"|"
1293 PLOTA,B+2,"|"
1294 PLOT A,B+3,"|"
1295 PLOT A,B+4,"|"
1310 WAIT10
1315 IF X>24 THEN 1321
1320 IF X>14 AND X<>A THEN 10000
1321 PLOT X,Y," "
1322 X=X+1:Y=Y+1
1323 IF X=A THEN 10500
1330 GOTO 920
10000 FOR I=0 TO 225
10001 SOUND 1,I,10
10002 NEXT I
10003 PING
10004 PLOT X,Y," "
10010 HM=HM-1:X=1
10030 WAIT 300
10040 IF HM=0 THEN GOTO 10060
10045 CLS:Y=16
10050 GOTO NM

```

```

10060 PLOT 13,15,"GAME OVER"
10070 WAIT 300
10080 PRINTCHR$(6);CHR$(17):RUN
10500 PLOT A,B," " :PLOT X,Y," "
10501 PLOT A,B+1," "
10520 PLOT A,B+2," "
10530 PLOT A,B+3," "
10540 PLOT A,B+4," "
10550 A=A+1:
10555 WAIT 7
10560 IF A>23 THEN A=A-13
10570 IF KEY$=" " THEN 1270
11000 PLOT A,B,"|"
11010 PLOT A,B+1,"|"
11020 PLOT A,B+2,"|"
11030 PLOT A,B+3,"|"
11040 PLOT A,B+4,"|"
11050 X=A:WAIT 7
11060 GOTO 10500
20000 PRINTCHR$(12):PRINT:PRINT:PRINT
:PRINT:PRINT:PRINT
20010 PRINT CHR$(4);CHR$(27);"N
  SUPER BONUS!!"
20015 PRINTCHR$(4)
20016 PING:WAIT10:PING:WAIT 10:PING
20020 SC=SC+INT(RND(1)*5000):D=50
20030 WAIT 500:NS=660:X=1:Y=16:CLS:A=
36:B=15:NH=310
20040 GOTO 310

```



EURO FLAGS

```

10 REM ** FLAGS OF EUROPE **
15 REM ** Written by ANDY GRANT **
20 RESTORE
25 TEXT:CLS:PAPER0:INK2:PRINTCHR$(17)
30 REM ** Menu **
35 PRINTCHR$(27);"J";CHR$(27);"D";SPC
(6);"FLAGS OF EUROPE"
40 PRINTCHR$(27);"J";CHR$(27);"A";SPC
(6);"FLAGS OF EUROPE"
50 PRINT
55 PRINT" 0 Austria"
60 PRINT" 1 Belgium"
70 PRINT" 2 Bulgaria"
80 PRINT" 3 Denmark"
90 PRINT" 4 Finland"
100 PRINT" 5 France"
110 PRINT" 6 Germany"
120 PRINT" 7 Greece"
130 PRINT" 8 Hungary"
140 PRINT" 9 Iceland"
150 PRINT" A Ireland"
160 PRINT" B Luxembourg"
170 PRINT" C Monaco"
180 PRINT" D Netherlands"
190 PRINT" E Norway"
200 PRINT" F Poland"
210 PRINT" G Spain"
220 PRINT" H Sweden"
230 PRINT" I Switzerland"
240 PRINT" J United Kingdom"
250 PRINT:PRINTCHR$(135)CHR$(27)"L
ENTER CODE FOR FLAG"
260 GETK$
270 K=ASC(K$)
275 IFK<48OR K>74THENGOTO260
276 IFK>57ANDK<65THENGOTO260
280 IFK>64THENK=K-54ELSEK=K-47
290 X=K*1000:GOSUBX
300 GOTO20
1000 HIRES:PRINT"          A U S T
R I A "
1010 FORX=0T0199:CURSET0,X,3
1015 IFX<67ORX>133THENFILL1,1,17ELSEF
ILL1,1,23
1020 NEXT
1030 GOTO25000
2000 HIRES:PAPER7:PRINT"          B
E L G I U M "
2010 FORX=1T0198:CURSET6,X,1:FILL1,1,
16:CURMOV80,0,1:FILL1,1,19:CURMOV80,0,
3
2020 FILL1,1,17:NEXT
2030 GOTO25000
3000 HIRES:PRINT"          B U L G
A R I A "
3010 FORX=0T0199:CURSET0,X,3
3015 IFX<69THENFILL1,1,23
3020 IFX>68ANDX<134THENFILL1,1,18
3025 IFX>133THENFILL1,1,17
3030 NEXT:GOTO25000
4000 HIRES:PAPER1:PRINT"          D
E N M A R K "
4010 FORX=0T0199
4015 IFX>87ANDX<114THENCURSET0,X,3:FI
LL1,1,23:GOTO4025
4020 CURSET80,X,3:FILL1,1,23:CURMOV26
,0,3:FILL1,1,17
4025 NEXT
4030 GOTO25000
5000 HIRES:PAPER7:PRINT"          F
I N L A N D "
5010 FORX=0T0199
5015 IFX>82ANDX<119THENCURSET0,X,3:FI
LL1,1,20:GOTO5025
5020 CURSET80,X,3:FILL1,1,20:CURMOV36
,0,3:FILL1,1,23
5025 NEXT
5030 GOTO25000
6000 HIRES:PRINT"          F R A N
C E "
6010 FORX=0T0199:CURSET0,X,1:FILL1,1,
20:CURMOV80,0,3:FILL1,1,23:CURMOV80,0,
3
6020 FILL1,1,17:NEXT
6030 GOTO25000
7000 HIRES:PRINT"          G E R M
A N Y "
7010 PAPER7:FORX=1T0199:CURSET6,X,3
7020 IFX<69THENFILL1,1,16
7025 IFX>68THENFILL1,1,17
7030 NEXT
7035 FORX=133T0199STEP3:CURSET6,X,3:F
ILL1,1,19:NEXT
7040 CURSET239,0,3:DRAW0,199,1
7050 GOTO25000
8000 HIRES:PRINT"          G R E E
C E "
8010 FORX=1T09:FORY=1T022:IFX=20RX=40
RX=60RX=8THENFILL1,1,23ELSEFILL1,1,20
8015 CURMOV0,1,3:NEXTY:NEXTX
8020 FORX=0T0110:CURSET0,X,3
8025 IFX<230RX>88THENFILL1,1,20:CURMO
V44,0,3:FILL1,1,23:CURMOV22,0,3:FILL1,
1,20
8030 IFX<230RX>88 THENGOTO8050
8035 IFX>44 AND X<67 THENFILL1,1,23:C
URMOV110,0,3:FILL1,1,20:GOTO8050
8040 FILL1,1,20:CURMOV44,0,3:FILL1,1,
23:CURMOV22,0,3:FILL1,1,20:CURMOV44,0,
3
8045 FILL1,1,23
8050 NEXTX

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EURO FLAGS

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8060 GOTO25000
9000 HIRES:PRINT"          H U N G
A R Y "
9010 FORX=0T0199:CURSET0,X,3
9015 IFX<69THENFILL1,1,17
9020 IFX>68ANDX<134THENFILL1,1,23
9025 IFX>133THENFILL1,1,18
9030 NEXT:GOTO25000
10000 HIRES:PAPER4:PRINT"
I C E L A N D "
10010 FORX=0T0199
10015 IFX>82ANDX<91THENGOTO10100
10020 IFX>109ANDX<119THENGOTO10100
10025 IFX>90ANDX<110THENCURSET0,X,3:F
ILL1,1,17:GOTO10050
10035 CURSET77,X,3:FILL1,1,23:CURMOV9
,0,3:FILL1,1,17:CURMOV18,0,3:FILL1,1,2
3
10040 :CURMOV10,0,3:FILL1,1,20
10050 NEXT
10060 GOTO25000
10100 CURSET0,X,3:FILL1,1,23:CURMOV89
,0,3:FILL1,1,17:CURMOV18,0,3:FILL1,1,2
3
10110 GOTO10050
11000 HIRES:PRINT"          I R E L
A N D "
11010 FORX=0T0199:CURSET0,X,3:FILL1,1
,18:CURMOV80,0,3:FILL1,1,23:CURMOV80,0
,3
11020 FILL1,1,17:NEXT
11030 FORX=0T0199STEP3:CURSET160,X,3:
FILL1,1,19:NEXT
11040 GOTO25000
12000 HIRES:PRINT"          L U X E M B
O U R G "
12010 FORX=0T067:CURSET0,X,3:FILL1,1,
17:NEXT
12020 FORX=68T0132:CURSET0,X,3:FILL1,
1,23:NEXT
12030 FORX=133T0199:CURSET0,X,3:FILL1
,1,20:NEXT
12040 GOTO25000
13000 HIRES:PRINT"          M O N A
C O "
13010 FORX=0T099:CURSET0,X,3:FILL1,1,
17:NEXT
13020 FORX=100T0199:CURSET0,X,3:FILL1
,1,23:NEXT
13030 GOTO25000
14000 HIRES:PRINT"          N E T H E
R L A N D S"
14010 GOTO12010
15000 HIRES:PAPER1:PRINT"
N O R W A Y "
15010 FORX=0T0199
15015 IFX>82ANDX<91THENGOTO15100
15020 IFX>109ANDX<119THENGOTO15100
15025 IFX>90ANDX<110THENCURSET0,X,3:F
ILL1,1,20:GOTO15050
15035 CURSET77,X,3:FILL1,1,23:CURMOV9
,0,3:FILL1,1,20:CURMOV18,0,3:FILL1,1,2
3
15040 :CURMOV10,0,3:FILL1,1,17
15050 NEXT
15060 GOTO25000
15100 CURSET0,X,3:FILL1,1,23:CURMOV89
,0,3:FILL1,1,20:CURMOV18,0,3:FILL1,1,2
3
15110 GOTO15050
16000 HIRES:PRINT"          P O L A
N D "
16010 FORX=0T099:CURSET0,X,3:FILL1,1,
23:NEXT
16020 FORX=100T0199:CURSET0,X,3:FILL1
,1,17:NEXT
16030 GOTO25000
17000 HIRES:PRINT"          S P A I
N "
17005 PAPER3
17010 FORX=0T049:CURSET0,X,3:FILL1,1,
17:NEXT
17020 FORX=150T0199:CURSET0,X,3:FILL1
,1,17:NEXT
17030 GOTO25000
18000 HIRES:PAPER4:PRINT"
S W E D E N"
18010 FORX=0T0199
18015 IFX>82ANDX<119THENCURSET0,X,3:F
ILL1,1,19:GOTO18025
18020 CURSET80,X,3:FILL1,1,19:CURMOV3
6,0,3:FILL1,1,20
18025 NEXT
18030 GOTO25000
19000 HIRES:PAPER1:PRINT"          S W I
T Z E R L A N D "
19010 FORX=41T0159
19020 IFX>80ANDX<120THENCURSET75,X,3:
FILL1,1,23:CURMOV90,0,3:FILL1,1,17
19025 IFX>80ANDX<120THENGOTO19040
19030 CURSET106,X,3:FILL1,1,23:CURMOV
26,0,3:FILL1,1,17
19040 NEXT
19050 GOTO25000
20000 HIRES:PRINT"          U N I T E D K
I N G D O M "
20010 CURSET0,20,1:FILL120,1,20:CURSE
T0,65,1:FILL31,1,23
20015 CURSET0,70,1:FILL21,1,17:CURSET
0,30,1:FILL5,1,23:CURSET0,124,1:FILL8,
1,23
20020 FORL=0T029:CURSET0+2*L,35+L,1:F

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EURO FLAGS

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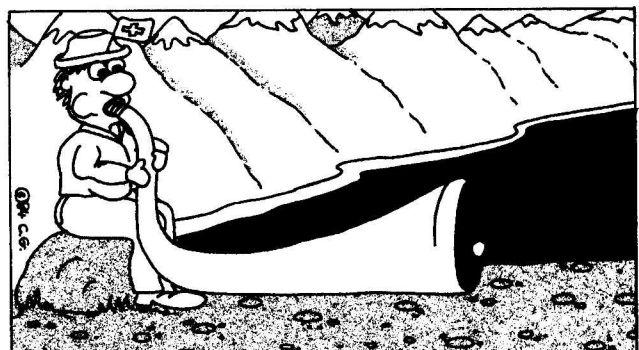
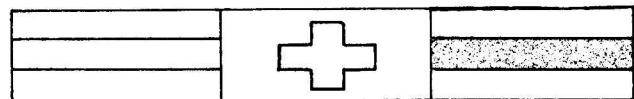
ILL1,1,23:NEXT
20030 FORL=0T029:CURSET0+2*L,125-L,1:
FILL1,1,23:NEXT
20040 CURSET0,20,1:FILL10,1,17:CURSET
0,133,1:FILL8,1,17
20050 FORL=0T034:CURSET0+2*L,30+L,2:F
ILL1,1,17:NEXT
20060 FORL=0T034:CURSET0+2*L,133-L,1:
FILL1,1,17:NEXT
20070 FORL=0T044:CURSET0+2*L,20+L,1:F
ILL1,1,23:NEXT
20080 FORL=0T044:CURSET0+2*L,140-L,1:
FILL1,1,23:NEXT
20090 FORL=0T040:CURSET15+2*L,20+L,1:
FILL1,1,20:NEXT
20100 FORL=0T044:CURSET15+2*L,140-L,1
:FILL1,1,20:NEXT
20110 CURSET100,20,1:FILL45,1,23:CURS
ET100,95,1:FILL45,1,23
20120 CURSET105,20,1:FILL120,1,17:CUR
SET135,20,1:FILL120,1,23
20130 CURSET135,20,1:FILL20,1,17:CURS
ET140,20,1:FILL40,1,20
20140 CURSET140,100,1:FILL40,1,20:CUR
SET140,60,1:FILL5,1,23
20150 CURSET140,95,1:FILL5,1,23
20160 FORL=0T040:CURSET140+2*L,60-L,1
:FILL1,1,23:NEXT
20170 FORL=0T040:CURSET140+2*L,100+L,
1:FILL1,1,23:NEXT
20180 FORL=0T045:CURSET140+2*L,65-L,1
:FILL1,1,17:NEXT
20190 FORL=0T045:CURSET149+2*L,95+L,1
:FILL1,1,17:NEXT
20200 FORL=0T042:CURSET155+2*L,65-L,1
:FILL1,1,23:NEXT
20210 FORL=0T035:CURSET167+2*L,95+L,1
:FILL1,1,23:NEXT
20220 FORL=0T030:CURSET175+2*L,65-L,1
:FILL1,1,20:NEXT
20230 FORL=0T030:CURSET175+2*L,95+L,1
:FILL1,1,20:NEXT
20240 MUSIC1,0,1,0:MUSIC2,0,1,0:MUSIC
3,0,1,9:PLAY7,0,7,200
20250 FORX=1T052:READN1,01,N2,02,N3,0
3,0
20260 MUSIC1,01,N1,7:MUSIC2,02,N2,7:M
USIC3,03,N3,9:WAIT0:NEXT
20270 MUSIC1,3,8,7:MUSIC2,2,12,7:MUSI
C3,1,8,9:WAIT300:PLAY0,0,0,0
20280 GOTO25000
22000 END
25000 PRINT
25010 PRINTSPC(4)CHR$(140)CHR$(128)CH
R$(146)"PRESS <RETURN> FOR MENU "CHR$(
144);

```

```

25020 PRINTCHR$(17);
25040 GETK$
25050 RETURN
26000 DATA8,3,12,2,8,1,70,8,3,12,2,5,
2,70,10,3,5,3,1,2,70
26010 DATA7,3,3,3,3,2,70,7,3,3,3,5,2,
35,8,3,3,3,5,2,35,10,3,3,3,7,2,70
26020 DATA12,3,3,3,8,2,70,12,3,5,3,5,
2,70,1,4,10,3,1,2,70
26030 DATA12,3,3,3,3,2,70,12,3,3,3,4,
2,35,10,3,1,3,4,2,35,8,3,12,2,5,2,70
26040 DATA10,3,1,3,1,2,70,8,3,12,2,3,
2,70,7,3,10,2,2,1,70
26050 DATA8,3,12,2,8,1,70,8,3,8,3,8,3
,35,10,3,10,3,10,3,35,12,3,12,3,12,3,3
5
26055 DATA1,4,1,4,1,4,35
26060 DATA3,4,12,3,8,1,70,3,4,12,3,12
,1,70,3,4,12,3,5,2,70
26070 DATA3,4,12,3,8,2,70,3,4,12,3,8,
1,35,1,4,10,3,8,1,35,12,3,8,3,8,2,70
26080 DATA1,4,10,3,2,1,70,1,4,10,3,7,
1,70,1,4,10,3,10,1,70
26090 DATA1,4,10,3,4,1,70,1,4,10,3,2,
1,35,12,3,8,3,2,1,35,10,3,7,3,3,1,70
26100 DATA12,3,3,3,8,1,35,12,3,3,3,3,
1,35,1,4,5,3,8,2,35,12,3,3,3,8,2,35
26110 DATA10,3,1,3,8,2,35,8,3,12,2,8,
2,35
26120 DATA12,3,8,3,8,1,35,12,3,8,3,3,
2,35,12,3,8,3,5,2,35,1,4,10,3,6,2,35
26130 DATA3,4,12,3,8,2,70
26140 DATA5,4,1,4,1,2,35,3,4,12,3,1,2
,17,1,4,10,3,1,2,17,12,3,8,3,3,2,100
26150 DATA10,3,1,3,2,1,120

```





SOFTWARE

The list of Oric Atmos software is growing all the time, as new titles are launched, or old titles converted to run on the Atmos. We've sorted the available software into groups, according to its type. That's to make it easier for you to find the titles you are interested in, and to show the variety of programs that are available.

Almost all these titles will run on the Oric-1 as well. They will have either a self contained operating system, independent of the ROM, or there will be two recordings, for the Oric-1 and the Atmos. Make sure you get the Atmos compatible version of a program if it has been upgraded recently. Oric-1 software is unlikely to run on the Atmos.

By the time you read this, more Atmos titles may well be available. If the title isn't in your local shop, give him the name of the software company, and ask him to order it for you.

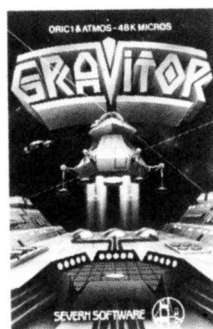


ADVENTURE

Adventure Quest	Level Nine	9.90
Colossal Adventure	Level Nine	9.90
Dungeon Adventure	Level Nine	9.90
Encounter	Severn	7.50
Fantasy Quest	IJK	6.50
Fishy Business	Salamander	9.95
Franklin's Tomb	Salamander	9.95
Grail	Severn	6.95
House of Death	Tansoft	9.99
Lords of Time	Level Nine	9.90
Lost in Space	Salamander	9.95
Moria	Severn	6.95
Mystery Tower	Quark Data	6.95
Operation Gremlin	Wintersoft	6.95
Ring of Darkness	Wintersoft	9.95
Snowball	Level Nine	9.90
Space Crystal	Quark Data	6.95
The Hobbit	Melbourne House	14.95
Velnor's Lair	Quicksilver	6.95
Zodiac	Tansoft	9.99

ARCADE

3D Invaders	Quark Data	6.95
Acheron's Rage	Softtek	6.95
Centipede	PSS	6.95
Defence Force	Tansoft	7.95
Delta 4	Nectarine	8.95
Digger	Mercury	6.95
Dracula	Mr Micro	6.90
Dracula's Revenge	Softtek	6.95
Elektrostorm	PSS	6.95
Galaxians	Softtek	6.95
Ghost Gobbler	IJK	7.50
Ghostman	Severn	7.50
Gravitor	Severn	7.50
Green Cross Toad	IJK	7.50
Harrier Attack	Durell	6.95
Hopper	PSS	6.95
Ice Giant	Softtek	6.95
Invaders	Arcadia	5.50
Invaders 1	IJK	7.50
Invaders 2	PSS	6.95
Jungle Trouble	Durell	6.95
Krokatile Waltz	Superior	7.95
Light Cycle	PSS	6.95
Loki	Joe the Lion	6.45
Lone Raider	Severn	8.50
Lynx Attack	Durell	6.95
Mined Out	Quicksilver	6.95
Moon Base Alpha	PSS	6.95
Mr Wimpy	Ocean	6.90
Mushroom Mania	Arcadia	5.50
Oric Munch	Tansoft	7.95
Pasta Blasta	Arcadia	5.50
Probe 3	IJK	7.50
Rat Splat	Tansoft	7.95
Scuba Diver	Durell	6.95
Spooky Mansion	Mercury	6.95
Starship	Sector 7	6.50
Super Meteors	Softtek	6.95
The Ultra	PSS	6.95
Them	Virgin	5.95
Two Gun Turtle	Lothlorien	5.95
Ultima Zone	Tansoft	8.50
Xenon 1	IJK	8.50
Zorgon's Revenge	IJK	8.50





SOFTWARE

BUSINESS

Account Book	Softbacks	12.50
Address File Manager	Sector 7	6.95
Author	Tansoft	14.50
Index	Peach	15.00
Labels	Peach	10.00
Mailstock	Peach	15.00
Oric Base	Tansoft	14.50
Oric Calc	Tansoft	14.50
Records	Peach	10.00
Shares	Peach	10.00
Stock	Peach	10.00
Superstock	Peach	15.00
Word Processor	Juniper	9.99
Writer	Peach	30.00

GAMES

Galaxy 5	Durell	6.95
Games for Children	Kindersoft	6.95
Hangman/Match	Ciro Soft	6.00
Hare Raiser	Hare Soft	8.95
Hicopy	Peach	5.00
Merchant Prince	Ciro Soft	6.00
Nowotnik Puzzle	Tansoft	6.90
Oric Golf	R & R	5.95
Parachutist/Fruit	Ciro Soft	6.00
Pontoon/Cribbage	IMF	5.95
Quack a Jack	Severn	7.50
Rescue	CRL	6.95
Reversi	IJK	6.50
Spooky Mansion	Mercury	7.95
Super Breakout	Tansoft	4.50
Waydor	IMF	7.50

EDUCATION

Masterclass French	Tansoft	12.95
Masterclass German	Tansoft	12.95
Masterclass Italian	Tansoft	12.95
Masterclass Spanish	Tansoft	12.95
Oric Quizmaster 1	R & R	5.95
Oric Quizmaster 2	R & R	5.95
Picture Book	Softbacks	4.95
Story Book	Softbacks	4.95
Teaching Course	Peach	25.00
Word Search	CDS	6.95
World Geography	Superior	7.95

OTHER

Graffix	Windmill	7.95
Oric Cad	Tansoft	9.99
Racing	Peach	10.00

STRATEGY

Classic Racing	Salamander	7.95
Flight Simulator	Quark Data	6.95
Frigate	IJK	6.50
Johnny Reb	Lothlorien	6.95
Oric Trek	Salamander	9.95
Paras	Lothlorien	6.95
Special Operations	Lothlorien	6.95

GAMES

3D Maze/Breakout	IJK	7.50
4 Games for Children	Kindersoft	9.95
Bingo	R & R	5.95
Candy Floss/Hangman	IJK	7.50
Check	Peach	5.00
Chess	Tansoft	9.99
Compendium	Salamander	7.95
Copy	Peach	5.00

UTILITY

Assembler	Superior	9.95
Extended Basic	Severn	8.95
Forth	Tansoft	15.00
Lightning Ass/Disass	Mr Micro	13.90
Oric Aid	Micrograf	11.95
Oric Mon	Tansoft	15.00
Orion Ass/Disass	Lothlorien	12.95
Super Extender	Softtek	6.95
Toolkit 48K	Superior	9.95

ORIC-1 SOFTWARE

The titles on this and the following page are all suitable for the 16K or 48K Oric-1 computer. They will not run on the Atmos, unless the software company has upgraded the program since this listing was compiled.

Programs are grouped in categories according to type. Given the title and the name of the maker, most dealers should be able to order any program for you. Alternatively, most companies do mail order business.

Oric-1 owners should also look at the Atmos lists. Most of those programs are also suitable for the Oric-1. So, you Oric-1 owners are rather spoilt for choice.

If you know of any other titles we may have omitted, please let us know of them.



ADVENTURE

Ace in the Hole	Add On	10.00
Arcane Quest	Add On	10.00
Balrog Castle	Sigma	6.00
Black Orc Castle	Sigma	6.25
Death House	Tomorrow's World	6.95
Dracula	Mr Micro	6.90
Dreadnought Disaster	Apocalypse	9.90
Dungeons of Intrigue	ASL	5.50
Horror Atoll	Add On	10.00
Leopard Lord	Add On	10.00
Mines of Saturn	Mikro Gen	5.95
Oric Adventure	Tevward	5.75
Psycho 2/3	LA Software	5.95
Quest	J Wolstencroft	6.95
Quest for Power	Cable	9.90
Return to Earth	Mikro Gen	5.95
Roundsby Incident	Add on	10.00
Runelord	MCP	7.50
Terror from the Deep	Add On	10.00
Tevrogs Kingdom	Cable	9.90
The Castle	Bugbyte	6.95
Valley	ASP	11.45
White Barrows	ASP	6.99

ARCADE

Alien Fallout	Eltronics	5.95
Arena 3000	Microdeal	5.50
Asteroids	Arctic	5.95
Bar Blaster	Byteland	4.95
Blowtorch Blaster	Touchstone	5.59
Bozy Boa	CDS	5.95
Dinky Kong	Severn	6.95
Froggee	Dream	5.50
Grid Bomb	Touchstone	5.95
Hunchback	Ocean	6.90
Jogger	Severn	6.95
Killer Caverns	Virgin	5.95
Krokatile Waltz	Superior	7.95
Loch Ness Monster	Romik	6.99
Lunar Mission	Superior	7.95
Oric Invaders	Titan	6.95
Road Frog	Ocean	6.90
Space Invaders	R & R	5.95
Starfighter	Durell	6.95
Terminator	Impact	6.50
The Pits	Touchstone	5.00

BUSINESS

Data Base	Gemini	19.95
Data Base II	Tomorrow's World	14.95
Spread Sheet	Gemini	19.95
Stockmarket	ASP	6.99

DOMESTIC

Biorythms	Tomorrow's World	5.95
Home Accounts	QED	10.95
Personal Finances	Juniper	9.99

EDUCATION

Assembly Language	Honeyfold	14.95
Basic Programming	Honeyfold	14.95
Beginners Ass. Language	Honeyfold	12.50
Beseiged	Sulis	9.95
Just a Mot	Sulis	9.95
Maths 4	IMF	5.90
Maths Games	Dream	5.50
Teach . . . Graphics	Basic Concepts	6.95
Teach Yourself Basic	Basic Concepts	6.95
Word Power	Sulis	9.95
World Geography	Superior	9.95

ORIC-1 SOFTWARE

GAMES

10K Othello	Epsilon	5.50
12K Backgammon	Epsilon	5.50
3 Games for Children	Kindersoft	7.95
3D Noughts & Crosses	Epsilon	5.50
50 Games	Cascade	9.95
50 Games 1	UTS	9.95
Action	Touchstone	5.00
Alien Pursuit/Maze	JPG Electronics	4.99
Amazea	Quark Data	4.95
B7	Polar	6.95
Bandit	Express	5.95
Battleship Patrol	Epsilon	5.50
Betabomb	BAJ Services	4.95
Blockbuster	Dream	5.50
Brad . . The Professor	Express	5.95
Breakout	Express	5.95
Cluster Controller	Ciro Soft	6.00
Code Breaker	Headfield	4.95
Contract Bridge	Touchstone	5.00
Cube Crazy	Tomorrow's World	6.95
Death Trap	Headfield	4.95
Dig Dog	Taskset	6.90
Escape from Manhattan	CRL	6.95
Evictor	Wizard	7.95
Farmer Horace	Elephant	6.95
Five Alike	Pase	4.99
Fruit/Pontoon	Computamaster	4.95
Games Pack	Sector 7	7.00
Games Pack	Shards	6.95
Games Pack 16K	Sector 7	5.95
Golf	Gem	7.95
Grid Attack	Shards	4.95
Happy Landings	Basic Concepts	6.95
Jerico 2	Elephant	6.95
Jumper	Eltronics	4.95
Knights	Headfield	4.95
Masterminder	Tomorrow's World	5.95
Mastermynde	Headfield	4.95
Memory Map	Byteland	4.95
Miner	Computasolve	8.50
Mole Capture	Compusound	5.95
Monster Mine	Gem	7.95
Monte Carlo Rally	Express	5.95
Moonster	Quark Data	6.95
Nightrider	Ciro Soft	6.00
Orical Backgammon	Dormere	7.95
Oricthello	Sigma	5.00
Painter	A & F	6.90
Paragram	Elephant	6.00
Rescue	CRL	6.95
Reversii	CDS	5.95
Ringo	Elephant	6.50
Route Rider	Byteland	4.95
Space Mission	CRL	6.95
Space Quest	Express	5.95
Sultans Maze	Gem	7.95

The Clone	Mercury	6.99
The Jester	Polar	5.95
The Word	Headfield	4.95
Vanquisher	Elephant	6.50
Variety Pack	QED	5.95
Video Challenge	QED	6.95
West Quest	PASE	4.99
Worm	PASE	4.99
Wiggler	FBC Systems	5.50
Zrymm	J Wolstencroft	4.50

OTHER

Composer	Sector 7	6.50
Electronic Calendar	Brainbox	6.95
Oriscope	Tomorrow's World	14.95
Romany Oracle	Quark Data	6.95
Synthesizer	Tomorrow's World	7.95

STRATEGY

10K Startrek	Epsilon	5.50
Airline	CCS	7.95
Champions	Peaksoft	6.95
Dallas	CCS	7.95
Election Fever	Whitsoft	7.95
Oil Baron	Whitsoft	7.95
Scramble	Microdeal	8.00
Space Shuttle	Microdeal	8.00
Startrek	J. Edwards	5.50
Supertrek	Mogul	6.95
Warlord	Lothlorien	6.95

UTILITY

Ass/Disassembler	Microplot	15.00
Ass/Disassembler	Durell	6.95
Assembler	Superior	9.95
Char/Graphic Gen	Headfield	4.95
Char/Sound Package	Nebulae	5.55
Character Design	Tomorrow's World	6.95
Extended Basic	Severn	7.50
Graphics Designer	Eltronics	4.95
Graphics Package	Dream	5.50
MC Monitor	Pase	4.99
Oric 6502 Ass/Dis	QED	7.95
Oricade	Severn	8.50
Oricmon	PSS	8.95
T-Comp	Bamby	12.95
Tape Copier	GS Teal	5.00
Tape Loader	Spectra	12.95
Toolkit	Superior	9.95
Toolkit 1	IMF	8.95

STARSHIP RETREAT

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10 HIMEM#9800
20 TEXT:GRAB:PAPER0:INK1
21 DIMQ$(53),G$(53),U$(5),B(70,1),N$(
70),S(55,4),N(70),X$(65)
30 GOSUB1530
31 CLS:GOSUB32000
32 RESTORE:GOSUB430
35 GOSUB1350
36 P=2
50 CLS
60 PRINTCHR$(131)"I am":PRINTQ$(P):A$
=" "
70 IFS(P,1)>0THEN A$="North"
80 GOSUB1560
90 IFS(P,2)>0ANDLEN(A$)>0THEN A$=A$+",
South"
95 IFS(P,2)>0ANDLEN(A$)=0THEN A$="Sout
h"
100 IFS(P,3)>0ANDLEN(A$)>0THEN A$=A$+",
East"
105 IFS(P,3)>0ANDLEN(A$)=0THEN A$="Eas
t"
110 IFS(P,4)>0ANDLEN(A$)>0THEN A$=A$+",
West"
115 IFS(P,4)>0ANDLEN(A$)=0THEN A$="Wes
t"
120 IFS(P,1)=0ANDS(P,2)=0ANDS(P,3)=0A
NDS(P,4)=0THEN A$="nowhere at all"
130 IFB=1THEN A$="DOWN":S(P,1)=0:S(P,2
)=0:S(P,3)=0:S(P,4)=0
140 IFA=10THENPRINT"YOU HAVE LOCATED
ALL THE TREASURES & HAVE NEARLY SOLVE
D THIS"
141 IFA=10THENPRINT"THIS ADVENTURE:-
ALL THAT IS LEFT TO DO NOW IS PHONE H
OME"
145 IFA=11THENCLS:INK2:PRINT:PRINT:PR
INT:PRINT
146 IFA=11THENPRINT"W E L L   D O N E
"
147 IFA=11THENPRINT"YOU HAVE COMPLETE
D YOUR TASK"
148 IFA=11THENFORX=1TO5:FORY=1TO150:S
OUND1,Y,10:NEXTY,X:SOUND1,0,0:END
150 PRINT:PRINT:PRINTCHR$(134);"I can
go :-":PRINTA$
160 E=0:FORT=1 TO 51:PP=0: IF B(T,1)=
P THENPP=1
170 IFPP=1THEN190
180 NEXT:GOTO210
190 IFE=0THENPRINT:PRINTCHR$(131);"Th
at looks like :-"
200 PRINTG$(T):E=E+1:GOTO180
210 PRINT:PRINTCHR$(130);"What should
I do now";:INPUTZ$
215 B$=LEFT$(Z$,2):C$=LEFT$(Z$,3)
217 FF=FREE("")
220 CLS:PRINTCHR$(131);"HANG ON A SEC
!"
225 IFLEFT$(Z$,2)="GO"THENPRINT"Just
use the first letter":GOTO60
230 PING
240 IFB$="N"ANDS(P,1)<>0THENP=S(P,1):
GOTO60
250 IFB$="W"ANDS(P,4)<>0THENP=S(P,4):
GOTO60
260 IFB$="S"ANDS(P,2)<>0THENP=S(P,2):
GOTO60
270 IFB$="SC"THENGOSUB1560:PRINT"You
have scored ";A;" out of 11":GOTO60
280 IFB$="E"ANDS(P,3)<>0THENP=S(P,3):
GOTO60
285 IFB$="TH"THEN1780
290 IFB$="GE"ORB$="TA"ORB$="GR"THEN74
0
295 IFC$="CL"THEN1820ELSEIFB$="RE"TH
EN1730ELSEIF(B$="FU"ORB$="PI")THEN1670
300 IFC$="TIM"ORZ$="READ TIME"THEN213
0
310 IFC$="DOW"THEN1830ELSEIFB$="HE"TH
EN1280
315 IFC$="SEA"THEN2090 ELSE IF(B$="DR
"ORB$="LE"ORB$="GI")THEN1010
320 IFC$="PHO"THEN2000ELSEIFB$="QU"TH
EN1850
325 IFC$="LOO"THEN60ELSEIFC$="KIS"THE
N2040ELSEIFB$="PR"THEN1700
326 IFC$="LOA"ORC$="CLO"THEN2050ELSEI
FB$="PU"THEN1750
330 IFC$="EAT"THEN1870
331 IFB$="AT"ORB$="KI"ORB$="HI"THENSH
OOT:GOTO1160
335 IFC$="OPE"THEN2140ELSEIFC$="SMO"TH
ENPRINT"I DON'T WANT LUNG CANCER!":GO
TO60
340 IFB$="EX"THEN1170ELSEIFC$="SWI"TH
ENCLS:PRINT"I CAN'T SWIM HERE DUMMY!":
GOTO60
345 IFC$="USE"ORC$="INS"THEN1260
360 IFC$="WEA"THEN1790ELSEIFC$="JUM"TH
EN1810
365 IFC$="INU"THEN1230ELSEIFC$="BUY"TH
EN1930
367 IFC$="CRA"THEN2150
370 IFC$="COO"THENPRINT"HOW CAN I COO
K ANYTHING HERE!":GOTO60
380 K$=LEFT$(B$,1)
390 IFLEFT$(A$,3)<>"SOR"THENLL=1ELSEL
L=0
400 IFB$<>" "ANDLL=1ANDK$<>"S"ANDK$<>"
N"ANDK$<>"E"ANDK$<>"W"THENPRINTX$(60)
410 GOTO60

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STARSHIP RETREAT

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420 END
430 FORH=1T051:FORD=1T04:READS(H,D):N
EXT:READQ$(H):NEXT
440 FORH=1T051:READG$(H),B(H,1):NEXT
450 FORH=1T069:READN$(H),N(H):NEXT
460 RETURN
470 DATA2,0,0,0,in the repair departm
ent,4,0,3,0
471 DATAin the intergalactic flight d
eparture lounge,0,0,5,2
472 DATAin the loading bay. There is
a sign here.It reads 'DROP TREASURES H
ERE
473 DATA0,2,0,0,in a sweet shop,6,0,0
,3,in the radar room,11,5,13,7
474 DATAin the BLAST OFF area,8,0,6,0
,in the crew's rest quarters,0,7,0,42
475 DATAin the crew's self service ca
feteria,0,0,10,0,in the freighter's st
ore
476 DATA43,11,0,9,in a mark one zolgr
at space freighter,10,6,0,49,in a corr
idor
477 DATA0,13,0,0,In the Lord High Exe
cutioner's office,12,15,14,6
478 DATAin my galactic firebird trave
ller,17,16,22,13,in the main cabin,13,
0
479 DATA16,0,by the control console,1
4,28,0,15,on the flight deck,18,14,0,0
480 DATAin the cargo hold,47,17,0,0,i
n the loading bay
481 DATA0,20,34,0,in the crew's recre
ation area,19,22,23,21,in a large duct
482 DATA0,0,20,0,on the docking platf
orm,20,24,32,14,in a large passage
483 DATA0,0,0,20,in the docking bay,2
2,0,25,0,in a small cupboard,0,0,0,24
484 DATAon a narrow ledge,0,0,31,0,in
a small stockroom
485 DATA0,44,29,28,in an intergalacti
c amusement arcade,16,0,27,0
486 DATAin the antique games section,
31,30,0,27,on a dusty aluminised sheet
487 DATA29,0,41,0,on an aluminised sh
eet on the planet surface.
488 DATA32,29,0,0,in a narrow corrido
r,33,31,48,22,in the corridor of Gordo
r
489 DATA0,32,0,0,in a wiring duct,0,3
5,0,19,in a maintenance room,34,37,0,
51
490 DATAin the ARD (applied research
dept),0,0,0,37,in the main chemical st
ore
491 DATA35,38,0,0,in the main laborat

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ory of the space station,37,0,0,0
492 DATAin a tiny room. To the South
I can see a deep chasm!
493 DATA38,0,0,0,in the rest home for
ancient crewmen,0,0,0,31,in a shower
494 DATA0,0,0,30,in a hyperspace inte
rgalactic phone booth.,0,0,8,0
495 DATAby the refuse disposal unit,0
,10,0,0,in the changing rooms,27,0,0,0
496 DATAin the DALEK translation labo
ratory,0,19,0,46,in a small workshop
497 DATA0,0,45,0,In a gallery full of
ZOBLOVIAN paintings.,0,18,0,0
498 DATAin the Zoblov control chamber
,0,0,0,32,in a kitchen,50,0,11,0
499 DATAin a space caretaker's mainte
nance room,0,49,0,0,in a cupboard
500 DATA0,0,35,0,spinning in a space-
time vortex !!!!!
520 DATAan inter galactic telephone,4
1,a phaser gun,21,a space-walker unif
orm
521 DATA43,a pair of dataphones,44,a
new *ROM* for an ORIC1,26
522 DATAa Goldinthian Warrior attacki
ng a poordefenceless kitten,2
523 DATAa bar of chocolate,4,a pet Tu
giz monster,19,some food,7
524 DATAa Van de Graaff generator,35,
an old caretaker from Folvat,31
525 DATAa book of evil spells,25,a pi
ece of #KRYPTONITE# in a lead cask
526 DATA12,a statue to LEFT$he hero o
f zolgon--- #PACMAN#,23
527 DATAthe beautiful (but venomous)
spider woman of Poturia,38
528 DATAa packet of Polvanian cigaret
tes,4,an angry laboratory technician,3
7
529 DATAa cage of venomous snakes,51,
a lever,47,a painting,48,a screwdriver
,49
530 DATAa bottle of paint stripper,36
,a giant Poturian lizard's egg,48
531 DATAa *JEWEL* encrusted frying pa
n,48,a rusty nail,45
532 DATA a *WARP* transporter crystal
,39,a roll of paper,40,a *LOG BOOK*,9
533 DATAa rope ,10,"",10,a bar of soa
p,33,some Integrated Circuits,1
534 DATAan intergalactic SWISS FRANK
lying on the floor.,3
535 DATAa cricket trophy,6,a jar of *
LIGURIAN SPICES*,36,a giant whip,16
536 DATAa space pilot's register,15,a
hyperspace map

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STARSHIP RETREAT

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537 DATA12,an irate Zoblovian Space p
irate,23,a hologram ,27
538 DATAa lazerian novel,28,a scull &
crossbones,30
539 DATAa clock,14,a large desk carve
d from solid plastic,18,a high chair,2
1
540 DATAa packet of 'MONSTER MUNCH' p
et food,4,a golden ring,24
541 DATAa pile of rubbish,42,a hard d
isc laser drive for an Oric,44
542 DATAa large computer called HAL,3
4,an ammeter,24
550 DATATELEPHONE,1,PHASER,2,GUN,2,UN
IFORM,3,DATAPHONES,4,ROM,5,*ROM*,5
551 DATAWARRIOR,6,KITTEN,6,CHOCOLATE,
7,BAR,7,MONSTER,8,FOOD,9,VAN DE GRAFF,
10
552 DATAGENERATOR,10,CARETAKER,11,BOO
K,12,KRYPTONITE,13,LEAD,13,STATUE,14
553 DATAPACMAN,14,SPIDER,15,WOMAN,15,
CIGARETTES,16,TECHNICIAN,17,CAGE,18
554 DATASNAKES,18,LEVER,19,PAINTING,2
0,SCREWDRIVER,21,BOTTLE,22,PAINTSTRIPP
ER
555 DATA22,STRIPPER,22,EGG,23,JEWEL,2
4,PAN,24,RUSTY,25,NAIL,25,WARP,26,CRYST
AL
556 DATA26,ROLL,27,PAPER,27,LOG BOOK,
28,ROPE,29,SCAFFOLDING,30,SOAP,31
557 DATACHIPS,32,FRANK,33,TROPHY,34,S
PICES,35,WHIP,36,REGISTER,37,MAP,38
558 DATAPIRATE,39,HOLOGRAM,40,NOVEL,4
1,SCULL,42,CLOCK,43,DESK,44,CHAIR,45,H
IGH
559 DATA45,PET FOOD,46,RING,47,RUBBIS
H,48,HARD DISC,49,DRIVE,49,HAL,50
560 DATACOMPUTER,50,AMMETER,51
740 GOSUB1470:IFL=1THEN770
750 IFL$="PACKET"ORL$="JAR"THENPRINT"
PLEASE BE MORE SPECIFIC!":GOTO60
760 GOTO210
770 E=0
780 FORH=1TO51
783 IFB(H,1)=P ANDB(N(R),1)=P THENE=1
790 NEXT
800 IFE=0THEN210
810 CLS
820 IFR=13THENAA=1
821 IFP=1ANDR=47ANDSS<>1THENPRINT"The
man won't let me have more than 1":GO
TO60
825 IFHH=1AND(R=22ORR=23)THENPRINTX$(
60):GOTO60
830 IFP=2ANDR=8ANDAD<>1THENPRINTX$(60
):GOTO60
832 IFP=2ANDR=9ANDAD<>1THENPRINTX$(4)
:SHOOT:GOTO1840
840 IFP=4AND(R=10ORR=11ORR=23ORR=24OR
R=62)THENPRINTX$(3):GOTO60
842 IFP=10ANDR=44THENPRINTX$(23):GOTO
60
850 IFR=47THENAC=1
852 IFP=19ANDR=12ANDAE<>1THENPRINTX$(
6):GOTO60
855 IFP=19ANDR=12ANDAE=1THENPRINTX$(7
)
857 IFR=10ORR=11THENAB=1
860 IFR=48THENAF=1
863 IFP=23AND(R=20ORR=21)ANDAJ<>1THEN
PRINTX$(33):GOTO60
865 IFP=23ANDR=54THENPRINT"JUST HOW A
M I SUPPOSED TO DO THAT!":GOTO60
870 IFR=48THENAF=1
871 IFP=12ANDR=53THENPRINT"SECURITY G
UARDS COME IN AND ARREST ME!":ZAP:GOTO
1850
880 IFP=3ANDR=48ANDG$(33)<>"SOME CHAN
GE"THENG$(33)="A SWISS FRANK"
890 IFP=14ANDR=58THENPRINT"It's screw
ed to the wall!":GOTO60
892 IFP=12ANDR=19THENPRINTX$(40):SHOO
T:GOTO1850
895 IFP=12ANDR=18ANDAK<>1THENPRINTX$(
41):GOTO60
897 IFP=12ANDR=18THENG$(13)="*KRYPTON
ITE*"
900 IFR=16THENPRINT"NOT LIKELY":GOTO6
0
903 IFR=28THENPRINT"Do I have to list
en to these stupid suggestions?":GOT
O60
905 IFR=26ORR=27THENPRINT"I'm not goi
ng near there!":GOTO60
910 IFP=37ANDR=25THENPRINT"Do you thi
nk this is a game?":GOTO60
911 IFP=35AND(R=14ORR=15)THENPRINTX$(
36):GOTO1840
920 IFP=38AND(R=22ORR=23)ANDAG<>1THEN
PRINTX$(24):G$(15)="" :GOTO60
922 IFP=43ANDR=4THENPRINT"I AM NOT AL
LOWED TO CARRY ONE OF THOSE":GOTO60
930 IFP=34AND(R=67ORR=68)THENPRINT"I
have just been arrested for theft!":GO
TO1850
940 IFP=42ANDR=64ANDAI<>1THENPRINTX$(
32):GOTO60
942 IFP=42ANDR=64THENPRINTX$(43):G$(4
8)="A KEY"
944 IFP=44AND(R=65ORR=66)THENAH=1
950 IFP=33ORP=43THENPRINTX$(45):GOTO1
850

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STARSHIP RETREAT

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960 E=0
970 FORD=1T03:IFV$(D)=""THENV$(D)=G$(
N(R)):E=1:D=5
980 NEXT
990 IFE=0THENPRINT"SORRY ! I can't ca
rry any more!":GOTO210
1000 B(N(R),1)=0:PING:GOTO60
1010 GOSUB1470
1020 IFL<>1THENPRINT"I haven't got a
";L$:ZAP:GOTO60
1030 E=0
1040 FORD=1T03
1045 IFV$(D)=G$(N(R)) THENV$(D)="" :E=
1
1050 NEXT
1060 IFE<>1THENPRINT"I don't have it!
":PING:GOTO60
1070 B(N(R),1)=P
1080 CLS
1090 IFAA=1ANDR=13THENAA=0
1093 IFAB=1AND(R=10ORR=11)THENAB=0
1095 IFAC=1ANDR=47THENAC=0
1096 IFP=38AND(R=10ORR=11)ANDHH<>1THE
NPRINTX$(27):G$(15)="*A PEARL*"
1097 IFP=38AND(R=10ORR=11)ANDHH<>1THE
NN$(23)="PEARL":AG=1:G$(7)="" :H=0:GOTO
60
1100 IFP=2ANDR=12THENPRINTX$(5):G$(6)
="A *GOLD* name tag":S(2,2)=1:AD=1
1104 IFP=2ANDR=12THENN$(8)="GOLD":N$(
9)="NAME TAG":ZAP:GOTO60
1110 IFP=19ANDR=62THENAE=1:PRINTX$(7)
1113 IFAF=1ANDR=48THENAF=0
1115 IFP=31ANDR=24ANDKR<>1THEN1980
1117 IFP=23ANDR<>57ANDAJ<>1THENPRINTX
$(35):GOTO1840
1120 IFP=37ANDR=30THEN2030
1123 IFP=38ANDR=45THENPRINTX$(29):S(3
8,2)=39
1124 IFP=38ANDR=45THENQ$(38)="In a tr
ansporter beam":GOTO60
1130 IFP=34ANDAH=1AND(R=65ORR=66)THEN
AH=2
1133 IFP=23ANDR=57THENPRINTX$(34):AJ=
1:G$(39)="" :G$(42)="" :GOTO60
1135 IFR=32ORR=33THENPRINT"AAAGGGHHH!
it has sprayed all over me!":ZAP:GOTO
1840
1140 IFR=34THENPRINTX$(42):G$(23)="" :
ZAP:GOTO60
1142 IFR=24ANDKR=1THENPRINT"I get arr
ested for dropping litter!":GOTO1850
1150 GOTO60
1160 IFP=2THENPRINT"I'm not doing tha
t":GOTO60
1163 PRINT"You must be mad!":GOTO60

1170 GOSUB1470
1180 IFP=2ANDR=9THENPRINTX$(1):GOTO21
0
1182 IFP=2ANDR=8THENPRINTX$(2):GOTO21
0
1183 IFP=43ANDR=4THEN"I'd rather not!
It's so horrible!":GOTO60
1185 IFP=38ANDR=23THENPRINT"She's bea
utiful but deadly!":GOTO60
1190 IFP=19ANDR=12THENPRINT"IT LOOKS
TAME!":GOTO60
1192 IFP=31ANDR=16THENPRINT"He is say
ing GIVE US A FAG MATE":GOTO60
1200 IFP=18ANDR=59THENPRINT"It's plas
tic!":GOTO60
1202 IFP=12AND(R=18ORR=19)THENPRINT"I
T'S LOCKED!":GOTO60
1204 IFP=6ANDR=49THENPRINT"What an UG
LY yhing!":GOTO60
1210 IFP=12ANDR=53THENPRINT"It's stam
ped TOP SECRET!":GOTO60
1220 PRINT"I can't see anything speci
al!":GOTO60
1230 PRINT:PRINT:PRINT"I HAVE :-":F=0
1232 FORH=1T03:IFV$(H)<>""THENPRINTV$(
H):F=1
1240 NEXT
1250 IFF=0THENPRINT"not a sausage!"
1255 GOTO210
1260 CLS:ZAP:GOSUB1470:IFP=23ANDR=64T
HENPRINTX$(38):GOTO60
1261 IFP=12ANDR=64THENPRINTX$(39):AK=
1:GOTO60
1270 PRINT"I'm afraid I just don't un
derstand you !":GOTO60
1280 CLS:IFP=2THENPRINT"He must be fr
ightened of something!":GOTO60
1282 IFP=16THENPRINT"I'd watch it if
I were you!":GOTO60
1284 IFP=1THENPRINT"I would try searc
hing through them!":GOTO60
1290 IFP=31THENPRINT"He demands a FAG
! before he will let me pass!":GOTO60
1300 IFP=23THENPRINT"What do pirates
like?":GOTO60
1302 IFP=18THENPRINT"Why not open it
?":GOTO60
1305 IFP=4THENPRINT"A notice here rea
ds "SHOPLIFTERS WILL BE PROSECUTED!":G
OTO60
1310 IFP=42THENPRINT"People always th
row SOMETHING which is of use!":GOTO60
1320 IFP=34THENPRINT"It looks like an
ORIC9":GOTO60
1321 IFP=37THENPRINT"He is searching
for something!."

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STARSHIP RETREAT

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1322 IFP=37THENPRINT"I think he must
have a screw loose!":GOTO60
1330 IFP=12THENPRINT"The case is made
of lead and it's locked!":GOTO60
1332 IFP=38THENPRINT"Women are usuall
y fond of chocolates!":GOTO60
1340 PRINT"I'M NOT GOING TO SOLVE THI
S FOR YOU!":GOTO60
1350 X$(1)="The kitten is in a bad wa
y!":
1351 X$(2)="The warrior looks very vi
cious!"
1352 X$(3)="I'm not a thief!"
1353 X$(4)="The warrior aims his gun
towards me and BANG!"
1354 X$(40)="AAAGGHHH! it's fallen on
top of me andcrushed me to death!"
1355 X$(41)="The case won't open!"
1356 X$(5)="The warrior take fright a
nd runs. The kitten drops something"
1357 X$(8)="That seems to do the tric
k !...He takes them and goes away!"
1358 X$(9)="The assistant takes my mo
ney and givesme the change"
1359 X$(7)="It eats some and is in a
good mood nowIt will come now!"
1360 X$(6)="It snarls at me !!!"
1361 X$(27)="'how kind of you' she sa
ys, 'please accept this gift!"
1362 X$(24)="She doesn't like that an
d flies away in discust!"
1363 X$(29)="Just the job! I can cros
s the chasm now!"
1364 X$(31)="There doesn't seem to be
much here!"
1365 X$(26)="She slaps me across the
face and runs off, throwing something
"
1366 X$(33)="He won't let me"
1367 X$(34)="He thanks me for the gif
t and takes it away!"
1368 X$(35)="That makes him mad. He s
tabs me!"
1369 X$(11)="My boss answers and give
s me some earache about being slow
!"
1370 X$(36)="As I reach out, a massiv
e spark of electricity jumps across
"
1371 X$(22)="He smiles, takes it from
me and walks away!"
1372 X$(23)="It's fastened at the top
!":X$(38)="WRONG KEY!"
1373 X$(39)="The key fits and the doo
r opens easily"

```

```

1374 X$(42)="What a YOKE!!! the egg s
platters on the floor"
1375 X$(46)="It's gone completely dar
k. I trip and break my neck!!!"
1376 X$(45)="a warrior comes in & fir
es his laser at me!"
1377 X$(60)="I'm not doing anything t
hat stupid!!!"
1460 RETURN
1470 L$="":FORH=1TOLEN(Z$)
1475 IFMID$(Z$,H,1)=" "THENL$=RIGHT$(
Z$, (LEN(Z$)-H)):H=H+60
1480 NEXT
1490 R=0
1500 L=0:IFLEN(L$)<2THENRETURN
1510 FORH=1TO69
1513 IFLEFT$(N$(H),LEN(L$))=L$ THEN L
=1:R=H
1520 NEXT:RETURN
1530 CLS:FORX=1TO2:PLOT1,X,14:PLOT2,X
,X:PLOT9,X,"STARSHIP RETREAT":NEXT
1540 PRINT:PRINT:PRINT:PRINT:PRINT"An
adventure game for the 48K Oric1"
1541 PRINT:PRINT:PRINTCHR$(131);"
<C> 1983 S.W. Lucas"
1545 FORX=1TO5:FORY=1TO155 :SOUND1,Y,
10:NEXTY,X
1546 SOUND1,0,0
1550 RETURN
1560 A=0:IFB(6,1)=3 THENA=A+1
1570 IFB(5,1)=3 THENA=A+1
1580 IFB(15,1)=3THENA=A+1
1590 IFB(26,1)=3THENA=A+1
1600 IFB(14,1)=3THENA=A+1
1610 IFB(24,1)=3THENA=A+1
1620 IFB(13,1)=3THENA=A+1
1630 IFB(32,1)=3THENA=A+1
1640 IFB(28,1)=3THENA=A+1
1650 IFB(35,1)=3THENA=A+1
1660 RETURN
1670 CLS:PRINT:PRINT:PRINT:PRINT"JUST
WHO DO YOU THINK YOU ARE?"
1673 PRINT:PRINT:PRINTCHR$(131);"WHAT
HAVE YOU GOT TO SAY FOR YOURSELF";
1678 FORX=1TO3:FORY=0TO255 STEP5:SOUN
D1,Y,10:NEXTY,X
1679 SOUND1,0,0
1680 INPUTZ$:Z$=LEFT$(Z$,3)
1683 IFZ$<>"SOR"THENCLS:PRINT"WELL I
WON'T TALK TO YOU ANY MORE!!":GOTO1850
1690 PRINT:PRINT"THAT'S BETTER":GOTO2
10
1700 IFP=17THENPRINT"Well you are in
the zen area!":ZAP:GOTO60
1710 IFP=2THENPRINT:PRINT"nothing hap
pens!":ZAP:GOTO60

```

STARSHIP RETREAT

```

1720 PRINT"NOTHING HAPPENS !":GOTO60
1730 GOSUB1470
1740 PRINT"There's not much here to r
ead!":GOTO60
1750 IFP<>47THENPRINT"NOT AT THE MOMEN
T!":GOTO60
1760 GOSUB1470
1770 IFR=28THENPRINTX$(46):GOTO1840EL
SEPRINT"PULL WHAT?":GOTO60
1780 GOSUB1470
1790 IFP=43THENPRINT"It's the wrong s
ize!":GOTO60
1791 PRINT"Don't be silly!":GOTO60
1800 GOTO60
1810 IFP=10ANDB=1THENPRINT"I JUMP FRO
M THE TOP & BREAK MY NECK":GOTO1840
1812 PRINT"I Can't!":GOTO60
1820 IFP=10THENQ$(10)="At the top of
a rope":G$(30)="some scaffolding"
1821 IFP=10THENB=1:GOTO60 ELSEPRINT"D
ON'T BE SO STUPID!":GOTO60
1830 IFP=10ANDB=1THENPRINT"O.K.":S(10
,1)=43:S(10,2)=11:S(10,3)=17:S(10,4)=9
1832 IFP=10ANDB=1THENQ$(10)="In an ol
d spacefreighter!":B=0:GOTO60
1835 PRINT"HOW?":GOTO60
1840 PRINT:PRINT:PRINT:PRINT:PRINT"I
A M      D E A D ! ! "
1844 PRINT:PRINT:PRINT"DO YOU WANT TO
PLAY AGAIN?"
1850 REPEAT
1851 GETA$
1855 UNTILA$="Y"ORA$="N"
1860 IFA$="Y"THENRUN
1861 CLS:PRINT"B Y E   B Y E !":ZAP
1862 END
1870 IFAA=1THENPRINT"I eat it! IT MUS
T BE A RED HERRING! It makes me sick
!"
1871 IFAA=1THENZAP:GOTO1840
1880 GOSUB1470
1890 IFR=62THEN2110ELSEPRINT"That's n
ot possible!":GOTO60
1900 FORH=1TO3:IFV$(H)=G$(32)THENV$(H
)="":G$(32)=" "
1902 NEXT
1910 FORH=1TO3:IFV$(H)=G$(7)THENV$(H)
="":G$(7)=" "
1915 NEXT
1920 GOTO60
1930 IFAF<>1THENPRINT"WHAT WITH?":GOT
O60ELSEGOSUB1470
1940 IFP=4AND(R=10ORR=11ORR=23ORR=24O
RR=62)THEN1950
1941 PRINT"Not at the moment!":GOTO60
1950 PRINTX$(9)

```

```

1951 FORD=1TO3
1952 IFV$(D)<>G$(33) THEN1960
1953 V$(D)="Some change":G$(33)="Some
change":N$(48)="CHANGE"
1960 NEXT
1965 GOTO860
1970 N$(48)="CHANGE":GOTO860
1980 PRINTX$(8):S(31,4)=26:S(31,2)=29
:S(31,3)=40:G$(11)=" "
1981 G$(16)="a cigarette wrapper":N$(
24)="WRAPPER":KR=1:GOTO60
1990 GOTO60
2000 IFP<>41THENPRINT"I'm not E.T. I
need a phone!":GOTO60 ELSEGOSUB1470
2010 IFLEFT$(L$,3)<>"HOM"THENPRINT"I
don't know that number!":GOTO60
2012 IFA<>10THENPRINTX$(11):GOTO60
2015 CLS:PRINT:PRINT:PRINT"WELL DONE!
"
2016 PRINT:PRINT:PRINT"THE TRANSPORT
SHIP IS ON ITS WAY ! "
2017 PRINT:PRINT:PRINT"YOU HAVE SOLVE
D THIS ADVENTURE!":
2018 FORX=1TO10:FORY=255TO0STEP-10:SO
UND1,Y,10:NEXTY,X:SOUND1,0,0
2030 X$(20)="":X$(21)="":PRINTX$(22):
G$(17)="":S(37,3)=36:PING
2032 G$(21)="a few screws":GOTO60
2040 GOSUB1470:IFP<>38THENPRINT"I'm n
ot kissing anything here!":GOTO60
2041 IFR=22ORR=23THENPRINTX$(26):ZAP:
G$(15)="hundreds of tiny spiders":HH=1
2042 IFR=22ORR=23THENGOTO60ELSEPRINT"
EH?":GOTO60
2050 IFP<>34THENPRINT"I can't do that
here and now dummy!":GOTO60
2060 GOSUB1470:IFAH<>2THENPRINT"There
doesn't seem to be a disc drive":GOTO
60
2070 PRINT"What a boring program not
like this one!":GOTO60
2090 IFP=1THENPRINT"I can see a new C
HIP for the ORIC":SS=1:G$(32)="*CHIP*"
2091 IFP=1THENGOTO60
2100 IFP<>42THENPRINTX$(31):GOTO60
2105 PING:PRINT"IN AMONGST ALL THE RU
BBISH I SEE A KEY"
2106 G$(48)="a key amongst all the ru
bbish":AI=1:N$(64)="KEY":GOTO60
2110 CLS:PRINT:PRINT:PRINT"That's don
e it you fool!"
2112 EXPLODE:PRINT:PRINT:PRINT"I AM R
OLLING ROUND THE FLOOR IN AGONY"
2113 PRINT:PRINT:PRINT"What should I
do now";

```

STARSHIP RETREAT

```

2115 REPEAT:INPUTZ$:UNTIL LEFT$(Z$,3)
="PRA"
2120 PRINT:PRINT"Well that seems to d
o the trick!":GOTO60
2130 IFP=14THENPRINT"The clock says 1
2.05, but it isn't      moving!":GOTO60
2134 PRINT"I don't have a watch!":GOT
060
2140 IFP=18THENPRINT"There's nothing
there!":GOTO60ELSEPRINT"SORRY":GOTO60
2150 GOSUB1470:IFLZ<>1THENPRINT"STUPI
D"ELSEIFL$<>"WHIP"THENPRINT"DUMMY"ELSE
PRINT"NOT NOW"
2160 GOTO60
32000 PRINT"You have been sent upon a
dangerous      mission!"

```

```

32005 PRINT:PRINT:PRINTCHR$(131);"YOU
MUST NOT FAIL US !":ZAP
32010 PRINT:PRINT:PRINTCHR$(132);
32015 PRINT"We have sent you to the s
pace station of ZENDON to try to locat
e"
32020 PRINTCHR$(132);"TEN  items of t
reasure !"
32025 PRINT:PRINT:PRINTCHR$(129);
32030 PRINT"and bring these back to t
he loading  bay. You must then find a
"
32035 PRINT"way of contacting us so t
hat we can      come to collect the treas
ures"
32050 RETURN

```

RUNEWRIter

```

10 REM*****
20 REM      R U N E W R I T E R
30 REM::::::::::::::::::::::::::::
35 IFPEEK(#BBA4)=32THENPRINTCHR$(20)
40 CLS:PRINT
45 DIMA1$(77),B1$(77)
50 PAPER0:INK3
70 PRINTCHR$(4);CHR$(27);"N
RUNEWRIter";CHR$(4)
75 PRINT:PRINT
80 PRINT:PRINTCHR$(4);CHR$(27);"J
BY A.K. IRWIN AND W.J. IRWIN";CHR$(4)
90 PLOT5,9,"IN THIS PROGRAM YOU TYPE
IN A "
100 PLOT4,11,"SENTENCE AND ORIC WILL
TRANSLATE"
110 PLOT1,13,"THAT SENTENCE INTO THE
ELF-RUNES FROM"
120 PLOT13,16,"'THE HOBBIT'"
130 WAIT1000
140 GOSUB10010
150 CLS:PRINT:PRINTCHR$(4);CHR$(27);"
J      runewriter";CHR$(4)
160 PLOT5,10,"INPUT YOUR SENTENCE"
165 PLOT15,11,"NO MORE THAN TWO LINES
"
170 FORI=1TO10:PRINT:NEXTI
175 A$=":"GOSUB1000:INPUTA0$
180 LA=LEN(A0$)
185 IFLA>73THENPLOT2,11,"TOO LONG":WA
IT500:GOTO150

```

```

190 FORI=1TOLA
200 A1$(I)=MID$(A0$,I,1)
210 NEXTI
220 LB=0
230 FORI=1TOLA
240 LB=LB+1
250 IFA1$(I)<>CHR$(69)THEN 280
260 IFA1$(I+1)=CHR$(65)THENB1$(LB)=CH
R$(91):I=I+1:GOTO410
270 IFA1$(I+1)=CHR$(69)THENB1$(LB)=CH
R$(92):I=I+1:GOTO410
280 IFA1$(I)<>CHR$(78)THEN300
290 IFA1$(I+1)=CHR$(71)THENB1$(LB)=CH
R$(93):I=I+1:GOTO410
300 IFA1$(I)<>CHR$(83)THEN320
310 IFA1$(I+1)=CHR$(84)THENB1$(LB)=CH
R$(94):I=I+1:GOTO410
320 IFA1$(I)<>CHR$(84)THEN340
330 IFA1$(I+1)=CHR$(72)THENB1$(LB)=CH
R$(95):I=I+1:GOTO410
340 IFA1$(I)<>CHR$(79)THEN360
350 IFA1$(I+1)=CHR$(79)THENB1$(LB)=CH
R$(111):I=I+1:GOTO410
360 IFA1$(I)<>CHR$(81)THEN380
370 B1$(LB)=CHR$(99):B1$(LB+1)=CHR$(1
19):LB=LB+1:GOTO410
380 IFA1$(I)<>CHR$(32)THEN400
390 B1$(LB)=CHR$(123):GOTO410
400 A0=ASC(A1$(I))
405 IFA0=65ANDA0<=90THENB1$(LB)=CHR$
(A0+32)ELSEB1$(LB)=A1$(I)

```


RUNEWITER

```

410 NEXTI
440 A$="-":GOSUB1000
450 FORI=1TOLA:PRINTA1$(I);:NEXTI:PRI
NT
490 A$=" ":GOSUB1000
500 FORI=1TOLB:PRINTB1$(I);:NEXTI:PRI
NT
550 A$="-":GOSUB1000
600 PRINT"DO YOU WANT ANOTHER TRANSLA
TION?"
610 GETA$
620 IFA$="Y"THEN150ELSEEND
1000 FORJ=1TO38:PRINTA$;:NEXTJ:PRINT:
RETURN
10000 REM USER DEFINE GRAPHICS
10010 FORA=#B6D8TO#B7DF
10020 READB
10030 POKEA,B
10040 NEXT
10050 RETURN
10100 DATA8,45,58,8,8,8,8,0'[
10110 DATA12,18,33,18,12,18,33,0'\
10120 DATA51,12,12,18,12,12,51,0']
10130 DATA33,51,45,33,45,51,33,0'^
10140 DATA32,56,36,36,56,32,32,0'_
10150 DATA0,0,0,0,0,0,0,0'
10160 DATA24,20,18,24,20,18,16,0'a
10170 DATA28,18,20,24,20,18,28,0'b
10180 DATA16,16,16,24,20,18,17,0'c
10190 DATA0,51,45,45,45,51,1,0'd
10200 DATA34,54,42,42,42,34,34,0'e
10210 DATA41,50,36,40,48,32,32,0'f
10220 DATA33,18,12,12,12,18,33,0'g
10230 DATA34,50,46,34,50,46,34,0'h
10240 DATA8,8,8,8,8,8,8,0'i
10250 DATA8,8,8,8,8,8,8,0'j
10260 DATA32,32,32,32,40,52,34,0'k
10270 DATA24,20,18,16,16,16,16,0'l
10280 DATA0,51,45,45,45,51,0,0'm
10290 DATA0,8,40,28,10,8,0,0'n
10300 DATA49,42,36,49,42,36,32,0'o
10310 DATA17,26,20,16,20,26,17,0'p
10320 DATA0,0,0,0,0,0,0,0'q
10330 DATA24,20,18,20,24,20,18,0'r
10340 DATA32,16,20,26,10,2,2,0's
10350 DATA8,28,42,8,8,8,8,0't
10360 DATA48,40,38,34,34,34,34,0'u
10370 DATA48,40,38,34,34,34,34,0'v
10380 DATA24,20,18,20,24,16,16,0'w
10390 DATA42,42,28,8,8,8,8,0'x
10400 DATA62,34,34,62,42,42,42,0'y
10410 DATA8,8,8,8,8,28,42,0'z
10420 DATA0,0,0,8,0,0,0,0'
10500 REM*****

```

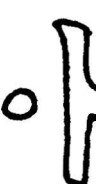




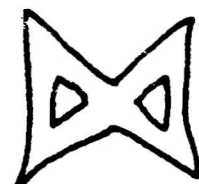


















C.G.

CHARACTER GENERATOR

```

1 REM *****
  ** CHARACTER GENERATOR **
2 REM **      by C. CHIN      **
  **      5 / 4 / 84      **
4 REM *****
10 HIMEM#97FF:PAPER7:INK4:CLS:GOSUB40
00'LDG
20 PRINTCHR$(6);CHR$(17);
30 FORI=0T08:PRINT:NEXT:PRINTCHR$(4);
SPC(10);E$;"J";E$;"DCHAR-GEN":PRINT
50 PRINT:PRINTCHR$(4);SPC(13);"by Con
rad Chin"
60 WAIT250:GOSUB3000'INSTRUCTIONS
80 CLS:INK0:PAPER6:PRINTCHR$(4);
81 PRINT:PRINT
82 IFCTHENPRINTCHR$(17);:C=0
83 IFPEEK(48039)<>83THENPRINTCHR$(20)
;
85 PRINTSPC(13);E$;"W      ";E$;"U"
90 PRINTSPC(11);E$;"J";E$;"F";E$;"W M
ENU ";E$;"U":PRINTCHR$(4)
100 PRINTSPC(13);E$;"W      ";E$;"U"
:PRINT
110 PRINT" '1'  DIRECT ENTRY OF NUMB
ERS":PRINT
120 PRINT" '2'  BUILD CHARACTER ON S
CREEN":PRINT
150 PRINT" '3'  SAVE STANDARD CHAR/S
ET":PRINT
160 PRINT" '4'  SAVE ALTERNATE CHAR/
SET":PRINT
190 PRINT" '5'  SAVE BOTH CHAR/SETS"
:PRINT
195 PRINT" '6'  BUILD PICTURE":PRINT
:PRINT
200 PRINT"  PRESSING 'ESC' AT ANY TI
ME WILL":PRINT
210 PRINT"      RETURN YOU TO THIS ME
NU":PRINT:PRINT
220 PRINTCHR$(9);E$;"F";E$;"D      PRE
SS '0' TO END PROGAM"
230 GETA$
240 A=VAL(A$):IFA>6OR(A=0AND A$<>"0"
HEN230
250 ONA+1GOTO300,600,800,2100,2150,22
00,5000
300 CLS:PAPER7:INK0:PRINTCHR$(6);CHR$
(17):PING:END
350 PRINT"WHICH CHARCTER IS TO BE RED
EFINED?":T1=4
355 PRINT"(PRESS RETURN IF YOU WANT T
O ENTER "
356 PRINT"THE ASCII-CODE INSTEAD)"
357 PRINTCHR$(20);
360 GETA$:IFA$=CHR$(13)THENPRINT:PRIN
T:GOTO390
365 IFA$=CHR$(27)THENPOP:GOTO80
370 IFASC(A$)<33ORASC(A$)>126THEN360
380 CH$=A$:CH=ASC(A$):GOTO420
390 PRINT"ENTER ASCII CODE      ";CHR
$(8);CHR$(8);CHR$(8);CHR$(8);CHR$(8);
395 GOSUB500:CH=N
400 IFCH<33ORCH>126THENPRINT:PRINTCHR
$(11);CHR$(11);:GOTO390
410 CH$=CHR$(CH)
420 CLS:PRINT:PRINT:PRINT"WHICH CHARA
CTERSET (0/1)?"
430 GETA$:IFA$<>"1"AND A$<>"0"AND A$<>E
$THEN430
440 IFA$=E$THENPOP:GOTO80
450 A3=#B400+CH*8-(#400*(A$="1"))
455 S=VAL(A$)
457 PRINTCHR$(20);
460 RETURN
500 T=1:N$="":I=0:N$=""
510 GETA$:IFA$=CHR$(13)ANDT>1THENGOTO
530
511 IFA$=CHR$(27)THENPOP:GOTO80
512 IFA$=CHR$(127)ANDT>1THENPRINTA$;:
T=T-1:N$=LEFT$(N$,LEN(N$)-1):GOTO510
515 IFASC(A$)>52ORASC(A$)<48THEN510
516 IFT=T1THEN510
517 N$=N$+A$
520 T=T+1:PRINTA$;
525 GOTO510
530 N=VAL(N$)
540 PRINT:RETURN
550 REPEAT:GETA$:UNTILA$="Y"OR A$="N"O
RA$=CHR$(27)
560 IFA$=CHR$(27)THENPOP:GOTO80
570 RETURN
600 CLS:INK0:PAPER6:PRINT:PRINT:PRINT
:GOSUB350
602 CLS:FORI=47080TO47087:POKEI,0:NEX
T
603 PLOT20,5,CHR$(0)+CHR$(10)+"CHARAC
TER":PLOT24,7,CHR$(0)+CHR$(10)+CH$
604 PLOT20,6,CHR$(0)+CHR$(10)+"CHARAC
TER":PLOT24,8,CHR$(0)+CHR$(10)+CH$
605 PLOT24,13,10:PLOT24,14,10:PLOT25,
13,125:PLOT25,14,125
606 PLOT23,13,0:PLOT23,14,0
607 PLOT18,11,CHR$(0)+CHR$(10)+"NEW C
HARACTER "
608 PLOT18,12,CHR$(0)+CHR$(10)+"NEW C
HARACTER "
609 IFS=1THENPLOT24,7,11:PLOT24,8,11
610 PRINT:PRINT:PRINT:PRINT"INPUT NUM
BERS":T1=3:PRINT
612 S$=MID$(STR$(S),2)
613 PLOT19,17,CHR$(0)+CHR$(10)+"CHARA
CTERSET":PLOT25,19,CHR$(0)+CHR$(10)+S$

```

CHARACTER GENERATOR

```

615 PLOT19,18,CHR$(0)+CHR$(10)+"CHARA
CTERSET":PLOT25,20,CHR$(0)+CHR$(10)+S$
620 FORI=0TO7
625 PRINT " ";I+1;E$;"D ";CHR$(8);
CHR$(8);CHR$(8);CHR$(8);
630 GOSUB500:IFN>63THENPRINTCHR$(11);
:GOTO625
635 A(I)=N:POKE47080+I,N
640 PRINT:NEXTI
642 PRINT:PRINT"DO YOU WANT TO FURTHER
CHANGE THIS"
643 PRINT"CHARACTER BY BUILDING UP ON
THE"
644 PRINT"SCREEN (Y/N)"
645 GOSUB550
647 IFA$="Y"THENGOSUB1200:GOTO840
650 CLS:PRINT:PRINT:PRINT:PRINT"DO YO
U WANT TO STORE THE CHARACTER?"
655 GOSUB550
660 IFA$="Y"THENGOSUB1300
670 CLS:PRINT:PRINT:PRINT:PRINT"DO YO
U WISH TO REDEFINE ANOTHER "
675 PRINT"CHARACTER BY THIS METHOD?(Y
/N)"
680 GOSUB550
690 IFA$="Y"THEN600ELSEGOTO80
800 CLS:PRINT:PRINT:GOSUB350:CLS:GOSU
B1000'SCREEN
810 T=0
820 FORI=A3TOA3+7:A(T)=PEEK(I):A(T)=A
(T)AND63:POKEAD+T,A(T)
825 A$=MID$(STR$(A(T)),2):IFLEN(A$)=1
THENA$=" "+A$
826 PLOT2,7+T*2,A$:PLOT2,8+T*2,A$:T=T
+1:NEXT
830 GOSUB1400
840 X=6:Y=7
850 F=SCRN(X+1,Y):PLOTX,Y,255:GETA$
860 IFA$=L$ORR$=R$THENGOSUB1500:GOTO8
50
870 IFA$=D$ORR$=L$THENGOSUB1600:GOTO8
50
880 IFA$=DE$THENGOSUB1700:GOTO850
890 IFA$=" "THENGOSUB1800:GOTO850
900 IFA$="3"THENGOTO810
910 IFA$="2"THENGOSUB1950:GOTO850
920 IFA$="1"THENGOSUB1900:GOTO850
930 IFA$=E$THENCLS:GOTO80
940 IFA$="S"THENCLS:PAPER7:INK0:GOSUB
1300:GOTO970
950 IFA$="N"THENGOTO970
960 GOTO850
970 CLS:PAPER6:INK0:PRINT:PRINT:PRINT
:PRINT"DO YOU WISH TO REDEFINE ANOTHER
"
980 PRINT"CHARACTER BY THIS METHOD(Y/

```

```

N)":GOSUB550:IFA$="Y"THEN800
990 IFA$="Y"THEN800
995 GOTO80
1000 CALL#E6CA:CLS:PAPER7:INK4
1010 PRINTCHR$(4);:PRINT:PRINT " ";E$;
"J";E$;"D CHAR-GEN"
1015 PRINTCHR$(4)
1020 I$=CHR$(255):I1$=I$+I$+I$+I$+I$+
I$+I$+I$+I$+I$+I$+I$+I$+I$+I$
1030 B$=CHR$(16):I2$=I$+B$+B$+B$+B$+B$
+B$+B$+B$+B$+3$+B$+B$+I$
1040 PLOT5,6,I1$:PLOT5,23,I1$:FORI=7T
O22:PLOT5,I,I2$:NEXT
1050 FORI=4TO26:PLOT19,I,23:PLOT20,I,
10:PLOT21,I,2:PLOT22,I,255:PLOT1,I,10
1060 PLOT23,I,1:PLOT35,I,2:PLOT4,I,3:
NEXT
1065 POKE48160,21:POKE48241,2:POKE490
01,2
1067 IFS=1THENPLOT28,8,11:PLOT28,7,11
1070 PLOT26,5,"CHARACTER":PLOT26,6,"C
HARACTER":PLOT26,9,"ASCII CODE"
1080 PLOT26,10,"ASCII CODE":PLOT30,7,
CHR$(2)+CH$:PLOT30,8,CHR$(2)+CH$
1090 PLOT29,11,STR$(CH):PLOT29,12,STR
$(CH)
1095 PLOT25,13,"CHARACTERSET":PLOT25,
14,"CHARACTERSET"
1096 PLOT30,15,STR$(S):PLOT30,16,STR$
(S)
1100 FORI=23TO38:PLOTI,17,255:NEXT
1105 PLOT29,19,"NEW":PLOT29,20,"NEW":
PLOT26,21,"CHARACTER"
1106 PLOT26,22,"CHARACTER"
1110 PLOT29,23,CHR$(2)+")":PLOT29,24,
CHR$(2)+")"
1120 A2=A3+7:A1$=MID$(STR$(A3),2):A2$
=MID$(STR$(A2),2)
1130 PLOT0,5,CHR$(8)+CHR$(0)+A1$+CHR$
(2):PLOT0,24,CHR$(8)+CHR$(0)+A2$+CHR$(
2)
1150 CALL#E804:RETURN
1200 GOSUB1000:T=0:CALL#E6CA
1210 FORI=7TO22STEP2:FORN=0TO5
1230 IFA(T)AND2^NTHENPLOT16-2*N,I,"!!
":PLOT16-2*N,I+1,"!!"
1232 A$=MID$(STR$(A(T)),2):IFLEN(A$)=
1THENA$=" "+A$
1235 PLOT2,1,A$:PLOT2,I+1,A$
1240 NEXT:T=T+1:NEXT
1260 CALL#E804:RETURN
1300 PAPER6:INK0:CLS
1305 PRINT:PRINT:PRINT:PRINT:T=0
1310 FORI=A3TOA3+7
1320 POKEI,A(T)
1330 PRINT " ";I;"(";HEX$(I);")

```

CHARACTER GENERATOR

```

";ACT):PRINT
1340 T=T+1:NEXT
1360 PRINT:PRINTSPC(3);E$;"F";E$;"TPR
ESS SPACE BAR TO CONTINUE ";E$;"U"
1370 PLOT5,21,22:FORI=1TO30:K$=KEY$:I
FK$=" "OR K$=E$THEN I=100
1375 NEXT:IF K$=E$THEN POPGOTO80
1376 IF K$=" "THEN GOTO1390
1377 PLOT5,21,20:FORI=1TO60:K$=KEY$:I
FK$=" "OR K$=E$THEN I=100
1380 NEXT I:IF K$=E$THEN POP:GOTO80
1385 IF K$<>" "THEN GOTO1370
1390 RETURN
1400 CALL#E6CA:T=0
1405 FORI=7TO22STEP2:FORN=0TO5
1410 IF ACT)AND 2^N THEN PLOT16-2*N,I,";:
":PLOT16-2*N,I+1,";":GOTO1420
1415 PLOT16-2*N,I,CHR$(16)+CHR$(16):P
LOT16-2*N,I+1,CHR$(16)+CHR$(16)
1420 NEXT:T=T+1:NEXT
1430 CALL#E804:RETURN
1500 PLOTX,Y,F:X=X+2*(A$=L$)-2*(A$=P$
)
1510 IF X>16 THEN X=6
1520 IF X<6 THEN X=16
1530 PLOTX,Y,255
1540 RETURN
1600 PLOTX,Y,F:Y=Y+2*(A$=U$)-2*(A$=D$
)
1610 IF Y>21 THEN Y=7
1620 IF Y<7 THEN Y=21
1630 PLOTX,Y,255
1640 RETURN
1700 PLOTX,Y,F:X=X-2:IF X<6 THEN X=16
1705 PLOTX,Y,CHR$(16)+CHR$(16):PLOTX,
Y+1,CHR$(16)+CHR$(16)
1710 G=63-(2^((16-X)/2)):T=(Y-7)/2:ACT)=ACT)AND G:A$=MID$(STR$(ACT)),2)
1715 POKEAD+T,ACT)
1720 IF LEN(A$)=1 THEN A$=" "+A$
1730 PLOT2,Y,A$:PLOT2,Y+1,A$
1750 PLOTX,Y,255
1760 RETURN
1800 PLOTX,Y,";":PLOTX,Y+1,";":
1820 G=2^((16-X)/2):T=(Y-7)/2:ACT)=ACT)OR G
1825 POKEAD+T,ACT)
1830 X=X+2:IF X>16 THEN X=6
1850 A$=MID$(STR$(ACT)),2):IF LEN(A$)=
1 THEN A$=" "+A$
1860 PLOT2,Y,A$:PLOT2,Y+1,A$
1870 RETURN
1900 T=0
1905 FORI=7TO22:PLOT5,I,I2$:PLOT2,I,"
0":NEXT
1907 FORI=0TO7:ACT)=0:POKEAD+I,0:NEXT
1910 RETURN
1950 T=0
1955 FORI=7TO22:PLOT6,I,";":NEXT
":PLOT2,I,"63":NEXT
1957 FORI=0TO7:ACT)=63:POKEAD+I,63:NE
XT
1960 RETURN
2000 CLS:PAPER6:INK0
2010 PRINT:PRINT:PRINT"SLOW OR FAST(S
/F)?"
2020 GETA$:IFA$<>"S"AND A$<>"F"AND A$<>
E$THEN 2020
2030 IFA$=E$THEN POP:GOTO80
2035 CLS:PRINT:PRINT:PRINT"PUT TAPE I
N AND WIND TO CORRECT PLACE"
2040 PRINT:PRINT:PRINT" PRESS THE SP
ACE BAR WHEN YOU ARE"
2042 PRINT" READY TO START SAVI
NG"
2043 REPEAT:GETA$:UNTIL A$=" "OR A$=E$
2044 IFA$=E$THEN POP:GOTO80
2045 CLS:FORI=13TO14:PLOT16,I,CHR$(14
)+ "SAVING":NEXT
2050 RETURN
2100 GOSUB2000
2110 IFA$="F"THEN 2130
2120 CSAVE"CHARACTERSET0",S,A#B400,E#
3800:GOTO80
2130 CSAVE"CHARACTERSET0",A#B400,E#B8
00:GOTO80
2150 GOSUB2000
2160 IFA$="F"THEN 2180
2170 CSAVE"CHARACTERSET1",S,A#B800,E#
BB80:GOTO80
2180 CSAVE"CHARACTERSET1",A#B800,E#BB
80:GOTO80
2200 GOSUB2000
2210 IFA$="F"THEN 2230
2220 CSAVE"CHARACTERSETS",S,A#B400,E#
BB80:GOTO80
2230 CSAVE"CHARACTERSETS",A#B400,E#BB
80:GOTO80
3000 CLS:PAPER7:INK0:PRINT:PRINT:PRIN
T"DO YOU REQUIRE INSTRUCTIONS(Y/N)?"
3010 GOSUB550:IFA$<>"Y"THEN RETURN
3015 CLS:E$=CHR$(27)
3030 PRINT:PRINT"CHAR-GEN IS A CHARAC
TER GENERATOR "
3040 PRINT"PROGRAM DESIGNED TO HELP Y
OU CREATE"
3045 PRINT"YOUR OWN CHARACTERS EASILY
"
3050 PRINT:PRINT"IT OFFERS SEVERAL OP
TIONS YOU CAN "
3060 PRINT"MAKE A CHARACTER BY DIRECT
INPUT OF"

```


CHARACTER GENERATOR

```

3070 PRINT"NUMBERS.ALTERNATIVELY YOU
CAN BUILD"
3075 PRINT"A CHARACTER UP ON THE SCRE
EN WHILE THE";
3080 PRINT"COMPUTER WORKS OUT THE COR
RECT NUMBERS";
3085 PRINT"FOR YOU."
3090 PRINT:PRINT" ONCE YOU HAVE CREAT
ED SOME CHARACTERS";
3095 PRINT"YOU MAY LIKE TO TRY ARRANG
ING THEM "
3100 PRINT"TOGETHER TO MAKE A LARGER
PICTURE.THIS";
3110 PRINT"CAN BE DONE QUITE EASILY U
SING THIS"
3115 PRINT"PROGRAM"
3120 PRINT:PRINT" BEFORE YOU CAN STAR
T REDEFINING ANY"
3125 PRINT"CHARACTER YOU MUST FIRST I
NPUT THE "
3130 PRINT"CHARACTER YOU WISH TO REDE
FINE.THIS IS";
3135 PRINT"DONE BY PRESSING THE KEY C
ORRESPONDING";
3140 PRINT"TO THE REQUIRED CHARACTER.
REMEMBER TO"
3145 PRINT"USE SHIFT FOR UPPER CASE C
HARACTERS.":PRINT
3146 PRINT" PRESS SPACE BAR TO CONTI
NUE":REPEAT:GETA$:UNTIL A$=" "
3147 CLS:PRINT
3150 PRINT" IF YOU DECIDE TO ENTER NU
MBERS "
3155 PRINT"DIRECTLY THEN YOU WILL BE
REQUIRED"
3160 PRINT"TO ENTER EIGHT NUMBERS BET
WEEN ZERO "
3165 PRINT"AND SIXTY THREE.THEN IF YO
U WANT THE "
3170 PRINT"CHARACTER TO BE REDEFINED
ACCORDING TO";
3175 PRINT"YOUR DATA ANSWER 'Y' WHEN
ASKED IF YOU";
3180 PRINT"WISH TO STORE THE CHARACTE
R"
3185 PRINT:PRINT"IF YOU CHOOSE TO RED
EFINE A CHARACTER"
3190 PRINT"BY BUILDING IT UP ON THE S
CREEN YOU"
3195 PRINT"WILL HAVE TO MOVE THE BLUE
CURSOR "
3200 PRINT"AROUND THE SQUARE USING TH
E CURSOR "
3205 PRINT"KEYS.USE THE SPACE BAR TO
SET A SQUARE";
3210 PRINT"AND THE DELETE KEY TO DELE

```

TE ONE."

```

3215 PRINT"PRESSING 'S' WILL STORE YO
UR CHARACTER";
3220 PRINT"AND 'N' WILL CLEAR IT ALLO
WING YOU TO"
3225 PRINT"START A NEW ONE.THERE ARE
ALSO THREE"
3230 PRINT"SPECIAL KEYS LISTED BELOW"
:PRINT
3235 PRINT"PRESS '1' TO FILL THE GRID
"
3240 PRINT"PRESS '2' TO CLEAR THE GRI
D"
3245 PRINT"PRESS '3' TO DRAW THE ORIG
INAL "
3250 PRINT" CHARACTER ON THE
GRID"
3260 PRINT:PRINT" PRESS SPACE BAR T
O CONTINUE":REPEAT:GETA$:UNTIL A$=" "
3265 CLS:PRINT:PRINT" ONCE YOU HAVE D
EFINED SOME CHARACTERS";
3270 PRINT"YOU MAY LIKE TO ARRANGE TH
EM TOGETHER"
3275 PRINT"TO PRODUCE A COMPOSITE CHA
RACTER."
3280 PRINT"OPTION 6 ON THE MENU ALLOW
S YOU TO DO"
3285 PRINT"THIS.YOU CAN BUILD A PICTU
RE UP TO A"
3290 PRINT"MAXIMUM OF 5 CHARS. ACROSS
BY 6 DOWN"
3295 PRINT" IN THE TWO BOXES AT THE T
OP OF THE "
3300 PRINT"CURRENT CHAR. AND ITS CODE
WILL BE "
3305 PRINT"PRINTED.TO PRINT THIS CHAR
ACTER MOVE"
3310 PRINT"THE CURSOR TO THE CORRECT
POSITION IN"
3315 PRINT"THE SQUARE AND PRESS THE S
PACE BAR AND";
3320 PRINT"THE CHAR. WILL BE PRINTED
UNDER THE "
3325 PRINT"CURSOR."
3330 PRINT" TO CHANGE THE CURRENT CHA
R. USE THE "
3335 PRINT"KEYS F AND B TO GO FORWARD
OR BACKWARD";
3345 PRINT"RESPECTIVELY.IF YOU PRESS
SHIFT WITH "
3350 PRINT"THESE KEYS THEN THE YOU CA
N GO FORWARD";
3355 PRINT"OR BACKWARDS IN JUMPS OF F
IVE FOR"
3360 PRINT"SPEED."
3380 PRINT" TO CLEAR THE SQUARE PRESS

```

CHARACTER GENERATOR

```

L AND TO"
3390 PRINT "CHANGE CHARACTER SET PRESS
Q. C WILL"
3400 PRINT "SWITCH THE CURSOR ON/OFF"
3430 PRINT:PRINT"      PRESS SPACE TO
START"
3440 REPEAT:GETA$:UNTIL A$=" "
3450 RETURN
4000 FOR I=47080 TO 47080+7:POKE I,0:NEXT
4010 FOR I=47072 TO 47072+7:POKE I,63:NEX
T
4020 E$=CHR$(27):U$=CHR$(11):D$=CHR$(
10):L$=CHR$(8):R$=CHR$(9):DE$=CHR$(127
)
4025 AD=46080+125*8
4030 RETURN
5000 E$=CHR$(27)
5001 IF C THEN PRINT CHR$(17);
5002 IF PEEK(48039)=32 THEN PRINT CHR$(20
);
5005 PAPER6:INK0:CLS:PRINT:PRINT:PRIN
T:PRINT "DO YOU WISH TO USE STANDARD OR
"
5006 PRINT "ALTERNATE CHARACTERS?(S/A)
"
5007 GETA$:IFA$<>E$ AND A$<>"A" AND A$<>"
S" THEN 5007
5010 IFA$=E$ THEN 80
5020 IFA$="S" THEN AT=8:AT$=CHR$(10)+"S
TANDARD":B$=CHR$(255)
5025 IFA$="A" THEN AT=9:AT$=CHR$(10)+"A
LTERNATE":B$=CHR$(223)
5030 CLS:POKE 48480,21:PL0114,1,AT$:PL
0114,2,AT$:PLOT 6,6,"CHARACTER"
5033 FOR I=1 TO 29:PRINT CHR$(9);:NEXT
5036 FOR I=1 TO 16:PRINT CHR$(10);:NEXT
5040 PLOT 23,6,"ASCII CODE":CO=32:MA=1
26
5042 FOR I=3 TO 17:PLOT 1,4,255:PLOT 1,9,2
55:PLOT 17+I,4,255:PLOT 17+I,9,255:NEXT
5044 FOR I=5 TO 8:PLOT 3,1,255:PLOT 17,1,2
55:PLOT 20,1,255:PLOT 34,1,255:NEXT
5045 PLOT 9,8,AT:PLOT 11,8,8
5050 PLOT 10,8,CHR$(CO):PLOT 27,8,MID$(
STR$(CO),2)
5055 PLOT 27,15,B$+B$+B$+B$+B$+B$+B$
5056 PLOT 27,22,B$+B$+B$+B$+B$+B$+B$
5060 FOR I=16 TO 21:PLOT 27,1,B$+"      "+
B$:NEXT
5065 FOR I=12 TO 26:PLOT 22,1,CHR$(21)+CH
R$(16)+CHR$(5)+CHR$(AT)
5067 PLOT 38,1,21:NEXT
5070 FOR I=15 TO 25 STEP 2:PLOT 11,1,CHR$(0)
+"32 32 32 32 32 ":NEXT
5072 POKE 49104,21:POKE 49116,21:POKE 49
080,21
5075 FOR I=48520 TO 49040 STEP 40:POKE I,21
:POKE I+1,22:NEXT
5080 PLOT 6,13,CHR$(0)+"ASCII-CODES"
5095 X=1:Y=1:U$=CHR$(11):D$=CHR$(10):
L$=CHR$(8):R$=CHR$(9)
5097 PRINT CHR$(17);CHR$(20);:C=-1
5100 GETA$
5110 IFA$=L$ AND X>1 THEN PRINT A$;:X=X-1
5120 IFA$=R$ AND X<5 THEN PRINT A$;:X=X+1
5130 IFA$=D$ AND Y<6 THEN PRINT A$;:Y=Y+1
5140 IFA$=U$ AND Y>1 THEN PRINT A$;:Y=Y-1
5150 IFA$=" " THEN PLOT 27+X,15+Y,CHR$(C
0):GOSUB 5600
5160 CO=CO+(A$="b")-(A$="f")-5*(A$="F
")+5*(A$="B"):IF CO>MATHEN CO=32
5170 IF CO<32 THEN CO=MA
5180 PLOT 10,8,CHR$(CO):PLOT 27,8,MID$(
STR$(CO),2)+" "
5190 IFA$=E$ THEN PRINT CHR$(20);:GOTO 80
5200 IFA$="q" THEN GOTO 5000
5210 IFA$="c" THEN PRINT CHR$(17);:C=(C=
0)
5215 IFA$="l" THEN FOR I=16 TO 21:PLOT 28,I
,"      ":NEXT:GOSUB 5500
5220 GOTO 5100
5500 FOR I=15 TO 25 STEP 2:PLOT 2,1,"32 32
32 32 32 ":NEXT
5510 RETURN
5600 P$=MID$(STR$(CO),2):X1=X*4-2:Y1=
Y*2+13
5610 IF LEN(P$)<3 THEN P$=P$+" ":GOTO 561
0
5620 PLOT X1,Y1,P$:RETURN
6000 GETA$:END

```

THE THREE TOWERS

```

1 REM
      THE THREE TOWERS
2 REM
3 REM
10 POKE 618,2:TEXT
20 GOSUB 1000
40 HIRES:PAPER7:INK0
50 DIMA(3,7):M=0
60 FORI=1TO7:A(1,I)=-1:NEXT
70 FORI=1TO3
80 CURSET I*60,99,1:CIRCLE2,1
90 CURSET I*60-3,170,0:CHAR I+48,0,1
100 NEXT
110 CURSET 60,99,1
120 FOR I=7 TO 1 STEP-1
130 CIRCLE I*4+1,1:MUSIC 1,3,I,0:PLAY
1,0,1,1000
140 NEXT
200 CLS
210 PRINT"WHICH TOWER DO YOU WISH TO
MOVE A RING FROM ?";
220 GET S$:S=VAL(S$)
230 IFS=0ORS>3 THENPRINT:PRINTCHR$(14
0)+ "      INPUT ERROR";:ZAP:WAIT200:
GOTO200
240 FORI=1TO7:IF A(S,I) THEN 270
250 NEXT
260 PRINT:PRINT" THERE ARE NO RINGS O
N TOWER ";S;:WAIT200:GOTO 200
270 CLS
280 PRINT"ON WHICH TOWER DO YOU WISH
TO PLACE      THIS RING ?";
290 GET O$:O=VAL(O$)
300 IFO=0ORO>3 THENPRINT:PRINTCHR$(14
0)+ "      INPUT ERROR";:ZAP:WAIT200:
GOTO270
310 IF S<>O THEN 350
320 PRINT:PRINT" ARE YOU SURE (Y/N)
?"::
330 GETA$:IF A$="N" THEN 200
340 IF A$<>"Y" THEN 330
350 FORJ=1TOI-1:IF A(O,J) THEN 360
355 NEXT:GOTO 370
360 PRINT:PRINTCHR$(140)+ "      ILLEGAL
MOVE ";:ZAP:WAIT200:GOTO270
370 CLS
380 CURSET S*60,99,1:CIRCLE I*4+1,0
390 CURSET O*60,99,1:CIRCLE I*4+1,1
400 A(S,I)=0:A(O,I)=-1:M=M+1
405 F=FRE("")
410 FOR I=1 TO 7
420 IF A(3,I) THEN NEXT
430 IF I<8 THEN 200
440 CLS:PRINT:PRINT"      CONGRATUL
ATIONS"
450 WAIT300:TEXT:PRINT:PRINT:PRINT

```

```

460 PRINT" YOU COMPLETED THE PUZZLE
IN "
470 PRINT:PRINT"      ";M;" MOVES."
480 WAIT 100:PRINT:PRINT:PRINT:PRINT"
WOULD YOU LIKE ANOTHER GO (Y/N) ?";
490 GET A$:IF A$="Y" THEN RUN
500 IF A$<>"N" THEN 490
510 CLS:POKE 618,3:PLOT 16,13," BYE !"
":WAIT 1000:END
1000 REM INSTRUCTIONS
1005 PING
1010 CLS:PRINT:PRINT CHR$(138)"
THE THREE TOWERS"
1020 PRINT CHR$(138)"      THE THREE
TOWERS"
1030 PRINT:PRINT" THIS IS A PUZZLE WH
ERE YOU HAVE THREE "
1040 PRINT" TOWERS AND SEVEN RINGS.":
PRINT:PRINT
1050 PRINT" THE OBJECT OF THE GAME I
S TO":PRINT
1060 PRINT" TRANSFER ALL THE RINGS FR
OM THE FIRST "
1070 PRINT" TOWER TO THE THIRD TOWER.
":PRINT:PRINT
1080 PRINT" THE CATCH IS,- YOU CANNO
T PUT A ":PRINT
1090 PRINT"LARGE RING ON TOP OF A SMA
LLER ONE !"
1100 PRINT:PRINT:PRINTCHR$(140)"
HIT ANY KEY TO START ...";:GETA$:PI
NG:RETURN

```



DOSCOVERY

When the Disc Operating System (DOS) for the Oric Microdisc drive was written, a number of undocumented commands were included. We've been exploring these commands

On the three inch microdisc supplied with the Oric Microdisc unit, you get more than just an operating system. You also get three alternate character sets, a simple telephone directory and a character redesigner. These features aren't documented in the Microdisc manual.

You'll first become aware of them if you run the demonstration program. The page of text describing the disc system changes through the four character sets in sequence.

The three alternate character sets are accessed by the commands !SQUARE.CHS, !SLANT.CHS and !BOLD.CHS. We've printed each of the character sets here. You can use them within any program, and they will stay on screen until the computer is reset, or !STD.CHS restores the standard character set.

To redesign your own characters, use the short utility program on the DOS disc. It is accessed by !DESIGN. At the base of the screen, a character set appears. ASCII codes set the character to be redesigned, and it is shown, enlarged, at the centre of the screen. + and - keys increase or decrease the ASCII code. Use cursor keys and the space bar to toggle on/off pixels, until the desired character is shown. ESC gets you out of the utility, with the option to save a redefined character set on the disc.

!TELE loads the BASIC telephone directory program and its data. It will hold up to 100 entries, though you could amend the program listing to give more space.

A menu gives the options of outputting the file, searching for a number of altering entries. The numbers already in the file include those of Superman and Sooty!

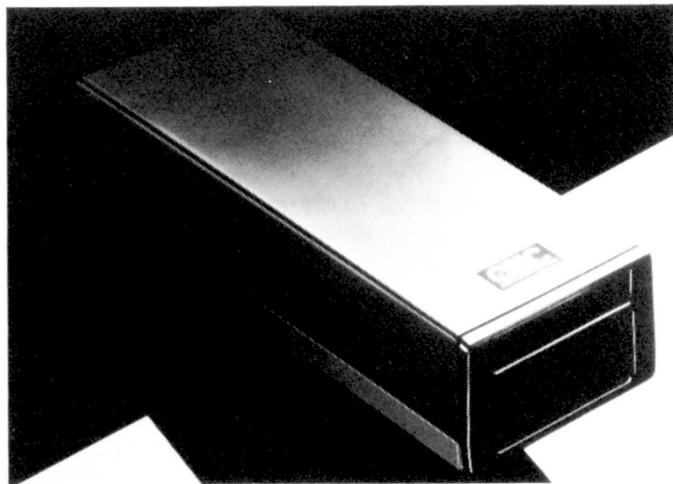
A handy, undocumented command is !OLD. It is a one byte command that will restore any program just NEWed.

!TYPE is yet another file on the DOS disc not covered in the manual. Entering the !TYPE will give a prompt for a file name. That file will then be printed out. If it is a command file, you'll get gibberish on the screen, but a file like TELE.DAT, the data for the directory, would be listed on the screen.

Obviously, it would be handy to have a printer directly accessed from the DOS. There is a command to do that, though it is undocumented. !PRINTER ON activates the printer port, so that any files listed by !TYPE or !DIR would be output to the printer.

!PRINTER ON acts until a Ready signal is output, and can be used in a program. !PRINTER OFF switches a printer off.

One of the most versatile commands in the DOS is



HELP. It is written in such a way as to enable one line of BASIC to access a sequence of BASIC routines. In effect, you can virtually define a command to initiate a series of commands, as languages like Forth permit.

LISTing the HELP routine shows what to do. Unamended, !HELP gives a screen display of various HELP files that can be accessed. You can enter the number of a file, or its name. Entering a number of names or numbers, separated by a space, accesses different files in turn. Entering a letter such as D will access all files starting with D.

The HELP program reads the entered file description and loads the relevant file from the DOS disc. In doing so, it calls a subroutine that simply returns the program to the file loading routine. It seems a very inefficient way of doing things.

Inefficient it may be, but it also enables the HELP program to be considerably expanded. Basically, if you use the branch before the file loading routine, you can enter any set of routines you want by simply entering the right file name.

The difference between !HELP and !LOAD"HELP" should be pointed out. The latter command just !LOADs what is in the quotation marks. If such a file doesn't exist, error messages will be generated.

When !HELP is entered, the whole line after ! is scanned. Any BASIC commands found, such as the FRE in FRED, are ignored, and the remaining information used to determine which, if any, HELP file is to be loaded. Spaces indicate which groups of characters are to be treated separately.

Customising the HELP routine is thus relatively straightforward. You may want to change the file names. You may want to arrange that certain BASIC commands be acted on, rather than ignored. You will want to write routines called by the !HELP command. The BASIC structure is there; you do with it what you want.

```
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHI  
JKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

```
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHI  
JKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

```
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHI  
JKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

```
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHI  
JKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```


The Oric Interview

PAUL KAUFMAN

As Managing Director of Tansoft, a software house specializing in software for the Oric computers, Paul Kaufman is an important figure in the Oric world. Kester Cranswick interviewed him recently.



Tansoft Limited and Oric Products International seem to be very closely linked. How has this happened?

The company was originally formed to be the software arm of Tangerine Computer Systems Limited. When that company ceased trading, and the Oric-1 was launched by the new Oric Products company, Tansoft rapidly became involved on the software side of things.

How did you get involved with computing, and Tansoft?

I left school with a wish to be in either the computer or the music business. I found a job as a trainee computer operator with Exploration Computing in London, before moving to Shell Exploration. In 1981 I joined Tangerine in a technical support role, helping customers and programmers. We launched the Tansoft Gazette to further this end. From there I worked my way up to Managing Director. In a sense, I'm still engaged in customer support though.

Why is Tansoft devoted exclusively to Oric Software?

Our close links with Oric Products and our knowledge of the machine made it an easy path to follow. We also saw a gap in the market, which were able to exploit before other companies. However, we are now thinking of broadening out to market Spectrum and Commodore 64 software, as those sections of the market are so buoyant.

How good do you think Oric software is, compared to that for other leading computers?

It must be born in mind that the Spectrum, Acorn and other computers have been around for considerably longer than the Oric. However, we are catching up fast, especially as more and more programmers get to grips with the Oric. Many of the wild rumours about its difficulty to program have been dispelled by some fine games.

You must see a great deal of software submitted for possible marketing. How good is it?

Having a best seller land on your desk in the morning is a rare event. Probably one in fifty programs submitted is good enough to sell.

Why is a program rejected?

A common reason is that the idea of the program is not original, for Oric software at any rate. We aren't really interested in versions of Pacman, Hangman or Lunar Lander, no matter how good they are.

I'll also reject programs if the quality of the programming isn't good enough. If the program is an arcade game, it must use Machine Code, or it won't be fast enough. Presentation and user friendliness are also vital.

If a program is accepted, what happens next?

It will probably need to be sent back and forth between us and the programmer three or four times to get it to a marketable state. We'll suggest improvements and give help where possible. Examples of programs that have gone this way are Ultima Zone, Defence Force and the Linkword Masterclass series.

Where do you get ideas for programs from, if they aren't sent in to you?

Increasingly, we are generating ideas in house and farming them out to any of half a dozen freelance programmers. We don't employ any programmers full time. An example of this approach is Rat Splat. A game I'd seen at a funfair started that one off. You had to hit cloth rats with a hammer as they were dropped down a drainpipe. We adapted the idea to a sewer system, with rats after pieces of cheese and a man after the rats.

Are old ideas still valid, or is it getting harder to think up new game ideas?

Old ideas still work, but the standard needed must be much higher. Original ideas are still easy to come by though.

If someone has a program that they think would be suitable for Tansoft, what should they do?

The best thing is to write a letter detailing the program or concept. We will then write back, suggesting improvements, giving encouragement and so on, or turn down the idea. However, we are always on the lookout for good software and welcome suggestions.

What can a programmer expect to earn from a good program?

There are two systems of payment. If the author opts

for a lump sum, they can expect from £500 to £5000 for a quality game. If there is a royalty agreement, there is more risk, but a best seller could earn the programmer up to £40000 or so. However, many programmers expect these sort of sums up front, and few companies are prepared to invest tens of thousands of pounds in a game before it is marketed.

What is the life of a software package?

Arcade games have a life of around six months. Business and educational titles may not sell in the same volume, but they keep selling steadily.

How important is the packaging of a program?

It is becoming increasingly important. A program must stand out on a dealer's shelf, and grab the eye with a bright, colourful cover. But, using packaging to dress up a poor product doesn't work in the long term. Customers will react in a negative way, and the long term affect is harmful.

Oric software is often criticised for being too restricted in availability. How do you answer that?

There is quite a lot of Oric software out there, but you may have to look for it. Oric's own software scheme is bound to help this, and I'm glad to see that they are at last taking the software market seriously.

The launch of the disc drive has opened up new software possibilities. Will you take advantage of them?

We are taking the disc system very seriously and are already working on a number of projects. We have also helped produce the two promotional discs being offered with the Microdisc unit.

You have a toehold in the business market. Do you see that area developing?

Our business software has proved successful and we intend to concentrate on it more heavily. We are already adapting some packages to disc, with improvements. The launch of the disc drive is therefore a major development.

Educational software for the Oric is in short supply. Do you have any plans in this direction?

Again, it is an area we are very interested in, and we hope to have a number of early learning programs available before Christmas. Most of the material sent to us is quite boring. We look for good use of graphics, sound, anything to make the learning process fun and stimulating.

What sort of trends do you see emerging in the software industry?

Piracy has been much talked about. We condemn it, of course, but recognize that the problem is hard to beat. The only solution is to incorporate such safeguards as are economically viable, and to make the product so good, the customer won't want to buy a pirate program.

Mail order software selling has fallen off dramatically, but the growth in sales through non-specialist outlets is not necessarily a good thing. Often the store buyers are sold on packaging, and may not recognize a good program when they see one. The spurious software

charts don't help either, as they bear little relation to what is really selling.

Cost cutting is another trend that may cause problems. Smaller software houses don't have the muscle to match competitive pricing by the larger companies getting involved in the market. A price war will hurt the industry very badly.

You have ventured into the publishing field, and are also launching the Oric Club. How do these endeavours fit in with software activities?

With both the magazine and the club, we are providing a service to the customer that is not provided elsewhere. With the software industry being as turbulent as it is, it is prudent to have a number of strings to one's bow too.



What computers do you own?

From my Tangerine days, I have a Microtan 65 rack system, with discs. I also have a number of Orics, including a handmade Oric-1. I helped write the sound software for the Oric-1, thus combining musical and computer interests.

I also have a Sinclair ZX81, a Spectrum, a Commodore 64 and a Jupiter Ace.

You are a keen fan of the Forth Language. Why does it appeal to you?

It is a superb language for the creation of applications programs, as it runs faster and virtually compiles itself. It is a little harder to learn than BASIC, so not really a language for beginners.

How do you get away from computers?

I play guitar, as a hobby, and am a self-confessed HiFi maniac. I also try and follow the arts. I believe that the best programs are invented by creative individuals, rather than logical thinkers, and so I try to keep my creative faculties as fresh as possible.

Do you have any further ambitions in the computer world?

I'd like to develop Oric software to equal or better that being produced for the Spectrum and Commodore. The machine has the capability – its just learning the programming techniques.

ORIC SPEAK



You might do well to look deeper

The cartoon and clue indicate a BASIC command for the Oric computers. Hold the page up to a mirror to see the answer.

PEEK

DISASTER AREA

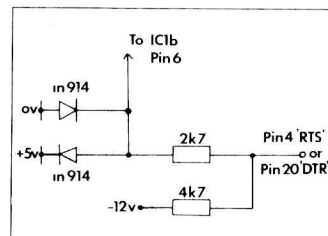
Oric Owner, Feb/March, contained an RS232C printer interface project. Some of the diagrams need altering, according to the author.

Fig 1. Add Pin 20|DTR|Data terminal ready|O/P

Fig 2. 'PARITY BIT' should be in the box marked with an asterisk, *

Fig 4. The capacitor connected to O/P of IC1b (Pin 4) should be 100pf. ACK pulse should have a 10ms width.

IC4a and its circuit can be omitted, like this. . . .



Half of IC4 is used, so a 741 single op amp may be used instead.

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Fig. 5. BASIC Machine Code Loader Issue 6

```

20000 INPUT "START ADDRESS IN HEX"; N$
20010 IF LEFT$(N$) = "#" THEN N$ = "#" + N$
20020 N = VAL(N$)
20030 CLS:???" LOCATION CONTENTS NEW CONTENTS"
20035 DOKE#26D, #BBF8:POKE623,24
20037 PRINT:PRINT
20040 REPEAT
20050 PRINT HEX$(N) " " HEX$(PEEK(N)) " ";
20060 INPUT A$
20065 IF A$ = "EEE" THEN 20120
20070 A$ = "*" + A$: A = VAL(A$)
20090 IF A = 255 THEN PRINT " ONE BYTE AT A TIME!"; GOTO 20050
20100 POKE N, A
20110 N = N + 1
20120 UNTIL A$ = "EEE" OR N # B3FE
20130 DOKE#26D, #BB80:POKE 623,27
    
```

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EXPLORING ADVENTURES ON THE ORIC 48K by Peter Gerrard

This is a complete look at the fabulous world of Adventure Games for the Oric Computer. Starting with an introduction to adventures, and their early history, it takes you gently through the basic programming necessary on the Oric before you can start writing your own games.

Inputting information, room mapping, movement, vocabulary – everything required to write an adventure game is explored in detail. There follow a number of adventure scenarios, just to get you started, and finally three complete listings written specially for the Oric, which will send you off into wonderful worlds where almost anything can happen.

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DUCKWORTH

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CROSSAID

Tracing the path of a program is not always easy, especially when a number of branches are involved. This useful program from Lars Hansen from Sweden will make that task easier.

What it does is to print out (on screen) any jumps from GOTO, GOSUB, THEN, ELSE, ON...GOTO commands. The number of the line in which the command occurs is printed out, and the number of the line branched to. You can get all variables printed out too, and find out how many bytes of memory your program occupies.

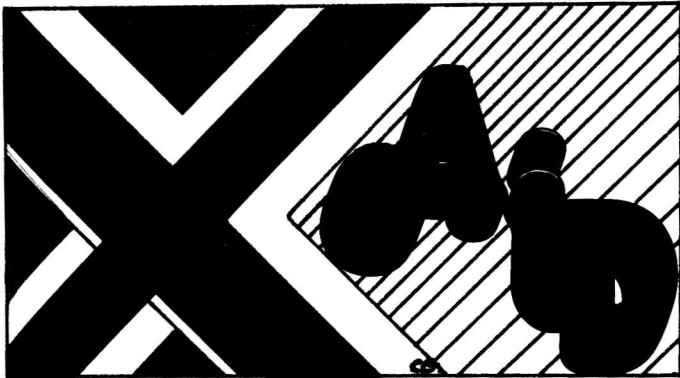
The END in line 59999 prevents any existing programs running on to execute Crossaid. To run Crossaid, enter RUN 60000. When the lines are listed, pressing any key will pass on to the variable listing. CTRL C will stop the program, and RUN 61000 will execute just the variable listing section.

To test Crossaid on itself, remove the '-1043' in lines 60040 and 61030.

Crossaid works by inspecting the RAM from 1280 to the last byte, given by DEEK(156). Line 60030 checks if a byte indicates a command that passes control to another line. 60160 reads the line number in which the command occurs. The program then reads the number of the line jumped to and the line numbers are printed out.

61160 tests to see if a variable has been listed already, while 61040 ensures that everything after a REM statement is ignored.

That's Crossaid, a program that's bound to be useful to the programmer.



```
59999 END
60000 CLS:PRINT"CROSSAID":PRINT:PRINT
"LINE REF. IN":PRINT
60010 A=1285
60020 B=PEEK(A)
60030 IFB=1510RB=1550RB=2000RB=201THE
N60050
60040 A=A+1:IFA>DEEK(156) THEN601
70ELSE60020
60050 GOSUB60110
```

```
60060 A=A+1:C=PEEK(A)
60070 IFC>47ANDC<58ORC=32THENPRINTCHR
$(C):GOTO60060
60080 IFC=44THENPRINTSPC(10-POS(1))L:
GOTO60060
60090 IFPEEK(A-1)>47ANDPEEK(A-1)<58OR
PEEK(A-1)=32THEN60100ELSE60020
60100 PRINTSPC(10-POS(1))L:GOTO60020
60110 D=A
60120 D=D-1
60130 IFPEEK(D)<>0THEN60120
60140 IFPEEK(D-4)=0THEND=D-4
60150 IFPEEK(D-3)=0THEND=D-3
60160 L=PEEK(D+3):RETURN
60170 PRINT:PRINT"PRESS KEY FOR VARIA
BLES"
60180 GETZ$
61000 PRINT:PRINT"VARIABLES":PRINT
61010 A=1280:DIMA$(20),B$(99):R=0
61020 A=A+1:N=0:Z=0:C=PEEK(A)
61030 IFA>DEEK(156) THEN61220
61040 IFC=1570RC=39THEN61050ELSE61060
61050 A=A+1:IFPEEK(A)=201THEN61020ELS
E61070
61060 IFC<>153THEN61080
61070 A=A+1:IFPEEK(A)=201THEN61020ELS
E61070
61080 IFC=1900RC=146THEN61090ELSE6110
0
61090 A=A+1:IFPEEK(A)=00RPEEK(A)=58OR
PEEK(A)=39THEN61110ELSE61090
61100 IFC<>212THEN61020
61110 B=A
61120 B=B-1:C=PEEK(B)
61130 IFC<360RC>920RC=580RC=59THEN611
60
61140 A$(N)=CHR$(C)
61150 A$=A$(N)+A$:N=N+1:GOTO61120
61160 FORP=0TO99
61170 IFA$=B$(P)THENZ=1
61180 NEXT
61190 IFZ=1THENZ=0:A$="":GOTO61020
61200 PRINTA$:B$(R)=A$:A$="":R=R+1
61210 GOTO61020
61220 PRINT:PRINT"SIZE ";A-1280;" BYT
ES":END
```

MARS

You don't need to be Patrick Moore to know what Mars looks like. Here, your Oric has a crack at rendering the red planet on the HIRES screen. The program is by ten year old Richard Kehoe of Dublin.

It is very simple and quite effective. With INK set to red, concentric circles are drawn to make the planet. Then smaller circles are drawn to show the starry background. Finally, MARS is charted along the bottom of the screen. That's all there is to it.

```
1 HIRES
2 PRINTCHR$(17)
5 INK1:PAPER0
10 A=1
15 CURSET120,100,1
20 CIRCLEA,1
30 A=A+1
40 IFA=70THEN60
50 GOTO20
60 CURSET190,10,1:CIRCLE2,1
70 CURSET120,12,1:CIRCLE3,1:CIRCLE5,1
80 CURSET 20,90,1:CIRCLE2,1
90 CURSET110,185,1:CIRCLE2,1
110 CURSET220,110,1:CIRCLE2,1
120 CURSET200,120,1:CIRCLE2,1
130 CURSET 60,160,1:CIRCLE2,1
140 CURSET 47, 47,1:CIRCLE2,1:CIRCLE3,1
145 CIRCLE4,1:CIRCLE5,1
150 WAIT10:PING
160 CURSET120,190,1:CHAR77,0,1
170 CURSET130,190,1:CHAR65,0,1
180 CURSET140,190,1:CHAR82,0,1
190 CURSET150,190,1:CHAR83,0,1
```

PATTERN

This is a pattern that seems to have a life of its own.

When RUN, up comes the HIRES screen and an interlaced pattern of lines is rapidly drawn, originating at five points. That takes you up to line 75.

From then on, circles take over. They are drawn concentrically, starting from the centre and the middle of the field. The way they interrelate gives a fascinating display that lasts for about a minute. It is all done by just six lines too. Try RUN 90 to see what happens to the circles away from their background. It is a very neat little pattern.

```
1 REM *** PATTERN ***
5 HIRES
20 FORI=0TOPI/2STEP.05:CURSET0,199,1
30 X=COS(I)*170:Y=SIN(I)*170
40 DRAWX,-Y,1:CURSET239,199,1:DRAW-X,-Y,1
45 X=X*.6:Y=Y*.6
50 CURSET119,0,1:DRAWX,Y,1:CURSET119,0,1:DRAW-X,Y,1
55 X=X*.95:Y=Y*.95
60 CURSET0,99,1:DRAWX,Y,1:CURSET0,99,1:DRAWX,-Y,1
70 CURSET239,99,1:DRAW-X,Y,1:CURSET239,99,1:DRAW-X,-Y,1
75 NEXT
90 CURSET119,99,1
100 FORI=1TO70STEP4
110 CIRCLE1,2:NEXTI
120 FORN=4TO1STEP-1
125 FORI=1TO80STEPN
130 CIRCLEI,0:CIRCLE81-I,1:NEXTI,N
200 CALL#E804:END
```

REMINDER

How often have you loaded programs that you didn't know the name of? This short routine, for the Oric-1, will help you out of that spot.

What it does is to display the name of any loaded program when CALLED. To use it, enter and RUN the routine. Then load the unknown program with CLOAD. Clear the screen and CALL #400. The name of the program will be displayed. Handy, eh? It's the work of Douglas Craig of Glasgow.

```
10 REM *** MIND ***
20 FORI=#400 TO #40D
30 READD:POKEI,D:NEXTI
40 DATA #A2,#00,#B5,#49
50 DATA #9D,#8A,#BD
60 DATA #E8,#8A,#E0,#11
70 DATA #D0,#F5,#60
80 END
```

COUNTRY SCENE

How quickly does the Oric draw? With this Quickie, from eleven year old Paul Meadows of Peterborough, it takes less than 20 seconds to draw a house, path, sun and stream, in full colour, on the HIRES screen.

Lines 20 to 50 draw the heart of the sun. Lines 60 to 85 add the rays. Lines 90-110 draw the roof of the house, line 120 the walls. Windows and doors are added by lines 130 to 150, line 160 draws the path. The stream is sketched by lines 170 to 175, and the rest of the program uses FILL to add the colours.

```
1 R=15:T=46:E=160
5 G=2
7 PAPER0:INK0
10 HIRES:PRINTCHR$(17)
20 FORN=-0TOPI*2STEP.1
30 CURSET160,50,1
40 DRAWCOS(N)*20,SIN(N)*22,1
50 NEXT
60 FORN=-0TOPI*2STEP.5
70 CURSET160,50,1
80 DRAWCOS(N)*30,SIN(N)*32,1
85 NEXT
```

```
90 X=30:Y=50
100 FORN=85TO100:CURSETX,N,1
110 DRAWY,0,1:X=X-1:Y=Y+2:NEXT
120 FORN=101TO140:CURSET30,N,1:DRAW50,0,1:NEXT
130 FORN=110TO120:CURSET35,N,0:DRAW9,0,0:CURSET35,N+15,0:DRAW9,0,0:NEXT
140 FORN=110TO120:CURSET65,N,0:DRAW9,0,0:CURSET65,N+15,0:DRAW9,0,0:NEXT
150 FORN=125TO140:CURSET49,N,0:DRAW9,0,0:NEXT
160 FORN=141TO199:CURSETT,N,1:DRAWR,0,1:T=T-.1:R=R+.5:NEXT
170 FORN=116TO199:F=E+(SIN(N)*5):CURSETF,N,1:DRAWG,0,1:G=G+.5:F=F+.01
175 E=E-.2:NEXT
500 CURSET0,0,3:FILL115,1,22:FILL85,1,18:CURSET8,84,3:FILL18,1,1
510 CURSET50,1,0:FILL81,1,3:CURSET8,141,3:FILL59,1,0
520 CURSET126,106,3:FILL94,1,4
```

CLASSIFIEDS

For ORIC-1 48K only, Hopper, Dinky Kong, Galaxians, Oric Multigames-1, Johnny Reb. Excellent games. £4.00 each. Contact: Mathew Shaer, 43 Glenham Drive, Gantshill, Ilford, Essex.

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WINDMILL SOFTWARE



GRAFFIX

by

Anthony Quinn

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SKETCH: RUBout: CURMOVE: CURSET: BOX: CIRCLE: TEXT
Initialising Program.
- PAGE 3: COLOUR: INK: PAPER: FILL: LINE: WINDOW
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Other Keys
How to LOAD a Picture
- PAGE 5: FILL (Auto)
- PAGE 6: FILL (Manual)
- PAGE 7: Copy of Keyboard overlay!

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ORIC

In the middle of Feltham, just off the M3 motorway, there's a small industrial estate. In the middle of that estate, there is a factory producing Oric computers and peripherals. In the middle of May, we paid a visit to that factory.

Until April, the factory was part of the large Kenure group, makers of plastics, microcomputers and many other things. They were contracted to Oric Products International to make the Oric computer. Servicing of the computers was carried out by another company, Ovacam, based in Cambridge.

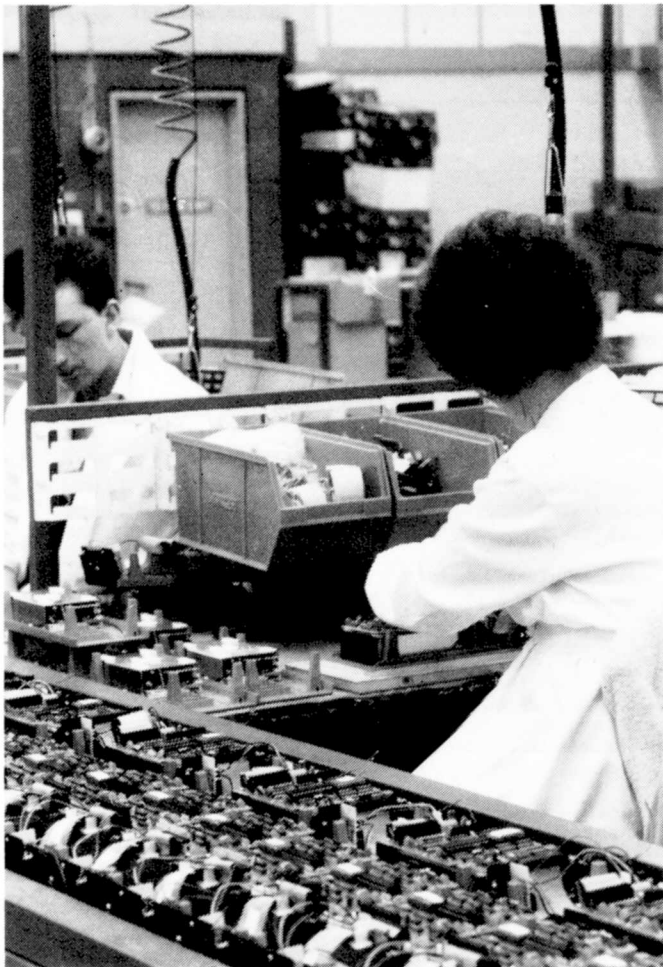
In April, Oric decided to combine manufacture and servicing. They bought the factory from Kenure, closed down Ovacam and bought both operations together at Oric Assembly. The man in charge is Brian Bains, and he's turned the place into a highly efficient operations centre.

The factory now assembles Oric computers and Microdisc units. It services all Oric products, and ships products all over the world.



The major components of an Atmos come like this, and are assembled at the factory. Kenure Plastics make the casings, the Printer Circuit Board (PCB) is made in Wales. This modular approach simplifies assembly and servicing.

Brian Bain's avowed aim is to 'give a better service than any other competing company.' To that end, the servicing time for Oric products is now down to 48 hours or less, and the Oric/Atmos upgrade is taking less than a week. On the assembly side, each computer is individually checked before it is packed, and the failure rate is very low indeed.



The Microdisc assembly line. This is a more complex product to put together, but again, a modular approach simplifies things.



Brian Bains, the man in charge, sees customer service as the number one priority.

The factory is an assembly plant. The various components of the Atmos and disc drive units come in from outside sources. Finished computers roll off the production line at the rate of 1200 a day, and the factory has the capacity to assemble twice that number of computers. The factory also expects to make some 18000 disc drives in the next year.

Some 50 people are employed at the factory. A sign of the direction of growth, and the emphasis on service, is

ASSEMBLY



Putting an Atmos together. The whole operation takes just a few minutes. The PCB is screwed to the base, the keyboard connected, the top of the case installed and rubber feet attached.

that the machine testing department has grown from one person a year ago to ten. A recent addition to the staff is a person whose task is solely to answer customer queries.

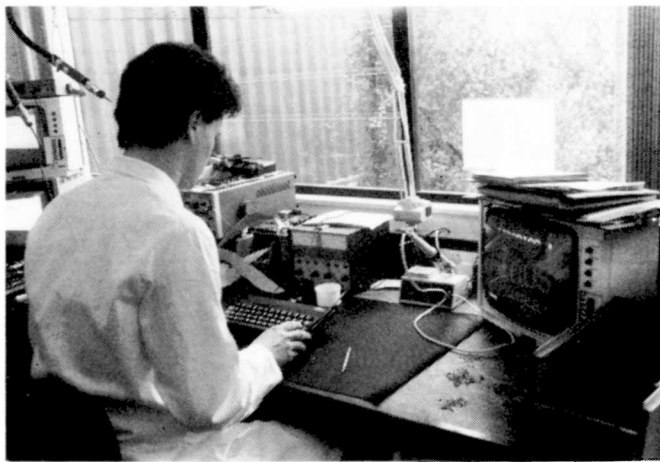
The upgrade service is proving popular, with over 100 machines a week being received. Machines that come in for routine servicing or repair go back with a new 12 month warranty too, and any available modifications done.



Testing an assembled Oric. A program is fed into the RAM via the cassette interface. Sound and screen functions are checked, as is the keyboard. Every machine is tested before packing.

One thing the service department has found is that about a third of all machines returned for servicing have no fault at all. The problem may just be that the TV isn't tuned, or something equally minor.

Whatever criticisms may have been directed at Oric servicing and customer relations now seem to have been well and truly laid to rest. With greater control over the



The service department is proud of its record. The oscilloscope is an important test tool. Faulty machines are more often than not replaced, rather than repaired.

assembly, more rigorous quality control and improved servicing, Brian Bains and his team have much to be proud of.



Finished Atmos computers roll off the production line. The factory currently assembles some 1200 machines a day.

Oric Manufacturing
Unit 11,
Hampton Farm Industrial Estate,
Hampton Road,
Hanworth,
Middlesex TW13 6DH

PRACTICAL MACHINE CODE

PART 3

Moving a shape about the screen is the subject of the third of David Sinden's Machine Code articles

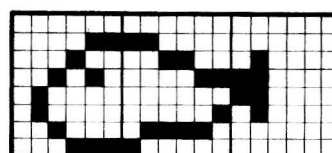
In previous articles we scrolled the screen sideways. The apparent movement was fast, but as it was necessary to slow it down considerably, it was very jerky. This was because the display was shifted a character position at a time. We can do better than that!

Before tackling the problem have a quick look at the program 'SWIMFISH'. You will find some instructions, like DEFB, ORG etc, that are not part of the 6502 mnemonic set. For this program I have used an assembler. You'll probably recognise the source code in column three. The object code (in hexadecimal) is in column two and column one holds the address of each line. I have underlined those words in column three that are assembler instructions and the descriptions are in the table. If you've had many dealings with the computer industry you'll realize that all assembler formats are not compatible so I can't guarantee that you'll be able to enter this source code with any assembler except the Superior Software Assembler from Darkstar. If you have a different assembler you may have to make some alterations to get the source code to conform. If you don't have an assembler, don't despair – the object code can be entered using any Hex loader. The BASIC program in part 1 (Oric Owner Feb/March) will do the trick. If you intend to do much experimenting with machine code you'll find that an assembler and monitor makes things much easier.

Now, let's see what can be done in the Oric's TEXT mode by way of smooth movement. We know that moving a character one position at a time is jerky so let's look inside the characters. Each position on the screen is made up of 48 'dots', or pixels, in a 6×8 grid. Each dot can be specified as being in foreground colour (on) or background colour (off). The information as to whether a particular dot is on or off is held in an area of RAM near the top of the memory map. These bit patterns are copied from ROM whenever the machine is turned on or reset. As the information is copied into RAM it is available to the programmer and the bit pattern of any character can be changed. The part of the Oric concerned with keeping the display up to date accesses the character definition data each time the screen is updated (every 50th of a second) irrespective of what the program is doing. It follows that a change in the character RAM alters the display, provided that the character whose bit pattern is being altered is on the screen. You'll have noticed the effect if you've ever redefined a character while it was displayed. SWIMFISH exploits this feature.

Animation involves displaying a series of 'frames'. How smooth the apparent movement is depends on how small a difference there is between successive frames. This has to be born in mind when it comes to defining graphics characters. Each frame has to be drawn over a suitably sized grid. I have chosen a grid three characters long by one deep. To keep the data table fairly short the program only redefines one of these characters. Hopefully, you will be able to expand on these ideas and produce moving objects to amaze your friends and put Space Invaders to shame.

The design and screen display of user defined graphics is adequately covered in the Oric manual. If you're not sure what is happening have a look at the manual and Figure 1 which shows how the first frame is constructed and how the numbers that describe it are arrived at. In particular, note how easily binary converts to hexadecimal if it is first broken into groups of four bits (nibbles), each nibble converted and the hex digits then stuck together. If even this is too arduous, the Superior Software assembler allows entry in binary but I think that the saving in the calculations is more than made up for in the extra keystrokes required to enter the numbers.



00	000000	00	0000	00	00	0000	00
00	001103	11	000030	00	0000	00	00
00	010004	00	100000	01	0000	10	00
00	101009	00	001103	11	000030	00	00
01	000010	00	000000	00	11	000030	00
01	000010	00	000001	01	01	0000	10
00	100008	01	111100	10	00	0000	00
00	011107	10	000020	00	00	0000	00

Figure 1 – Redefined first frame

SWIMFISH

```
10 FISH$=CHR$(35)+CHR$(34)
+ CHR$(33)
20 CLS
30 REPEAT
40 : REPEAT
50 : PRINT SPC(RND(1)6+1);
FISH$;
60 : UNTIL PEEK(269)>28
70 PRINT
90 UNTIL PEEK(268)>26
100 FOR COUNT=1 TO 100
110 CALL 1400
120 NEXT
```

Having drawn and digitised all the frames, they have to be transferred to the character RAM in sequence. This is the function of SWIMFISH. Don't worry about getting the characters up on screen – that's a job for BASIC.

Before looking at the program in detail have a look at Figure 2 – my idea of how the task can be broken down. It is important to stress that this is only my idea – there are probably as many ways of approaching the problem as there are programmers. As you can see I have chosen to tackle the job in three stages. The 'Main Prog' calls a routine called 'Transfer' and both of these use 'Delay'. This modular approach makes the programs as flexible as possible so although I have chosen an object three characters long with one character redefined in each

frame, you should be able to fit in objects of your own.

The flowchart translates into SWIMFISH, which looks fearsome but is actually less than 100 (decimal) bytes long, excluding the data.

***** MAIN PROGRAM *****

```

1400 A0 17 LDY@#17\ Bytecount (IY)=17
1402 A2 01 LDX@#1\ Framecount (IX)=1
1404 A9 15 LDA@#15\
1406 85 01 STA1\ Set Framepoint to
1408 A9 00 LDA@#0\ top of table.
140A 85 00 STA0\ TAIL FORWARD
140C 20 2B 14 JSR TRANSFER Bytecount=7
140F 20 4A 14 JSR DELAY Framecount=6
1412 A0 07 LDY@#7\ Update lowbyte of
1414 A2 06 LDX@#6\ Framepoint
1416 A9 18 LDA@#18\ Offset=8
1418 85 00 STA0\
141A A9 08 LDA@#8\
141C 85 03 STA 3\
141E 20 2B 14 JSR TRANSFER TAIL BACK
                          Framecount=6
1421 A2 06 LDX@#6\ Offset=-8
1423 A9 F8 LDA@#F8\ Note that Framepoint
1425 85 03 STA3\ and Bytecount
1427 20 2B 14 JSR TRANSFER are correct.
142A 60 RTS\ Return to BASIC

```

***** •TRANSFER *****

```

142B 98 TYA\ Store
142C 48 PHA\ Bytecount
142DB1 00 LDA(0),Y\ Transfer
142F 99 08 B5 STA #B508,Y\ Byte
1432 88 DEY\ Decrement Bytecount
1433 10 F8 BPL LOOP2\ If frame not complete
                          do next byte.
1435 20 4A 14 JSR DELAY
1438 CA DEX
1439 F0 0C BEQ END\ If all frames done END
143B A5 00 LDA 0
143D 18 CLC
143E 65 03 ADC 3
1440 85 00 STA 0
1442 68 PLA Recall bytecount
1443 A8 TAY for next frame
1444 4C 2B 14 JMP TRANSFER
1447 68 PLA\ To bring stack back to
                          state at beginning of
                          TRANSFER routine.
1448 A8 TAY
1449 60 RTS End of TRANSFER

```

***** DELAY *****

```

144A 98 TYA\ Save registers as
144B 48 PHA\ they will be needed
144C 8A TXA\ after this routine
144D 48 PHA\ is over.
144E A0 1F LDY@#1F
1450 A2 FF LDX@#FF
1452 CA DEX
1453 D0 FD BNE DEL2
1455 88 DEY
1456 D0 FA BNE DEL2

```

```

1458 68 PLA\
1459 AA TAX\ Get IX and IY
145A 68 PLA\ off the stack
145B A8 TAY\
145C 60 RTS End of DELAY

```

**** DATA ****

```

1500 00 00 10
      30 30 10
      00 00 DEFB0,0,#10,#30,#30,#10,0,0
1508 00 30 0C
      03 00 01
      1E 20 DEFB0,#30,#C,3,0,1,#1E,#20
1510 00 03 04
      0A 10 10
      08 07 DEFB0,3,4,#A,#10,#10,8,7
      \ Tail 1
1518 00 08 18
      28 38 08
      00 00 DEFB0,8,#18,#28,#38,8,0,0
      \ Tail 2
1520 00 0C 14
      24 24 14
      0C 00 DEFB0,#C,#14,#24,#24,#14,#C,0
      \ Tail 3
1528 00 02 06
      32 3A 0A
      06 00 DEFB0,2,6,#32,#3A,#A,6,0
      \ Tail 4
1530 04 0C 14
      24 24 14
      0C 04 DEFB4,#C,#14,#24,#24,#14,#C,4
      \ Tail 5
1538 08 08 18
      28 28 18
      08 08 DEFB8,8,#18,#28,#28,#18,8,8
      \ Tail 6
1540 10 10 10
      30 30 10
      10 10 DEFB#10,#10,#10,#30#30,#10,#10,#10

```

@ as in LDA@ # 17 indicates the immediate mode of addressing.

• indicates that a label follows.

DEFB DEFine Byte. Used to set up the data area.

There is nothing too complex in the part of the program called 'Main Prog'. All it does is set up some parameters in the X and Y registers and locations in zero page that are used by the 'Transfer' routine. Don't worry at this stage about what these parameters are used for. When we look at the 'Transfer' routine all will become clear. Note that the return to BASIC comes at the end of this routine and not at the end of the whole lot.

The real meat of the program is in 'Transfer'. First I should explain that the routine is preceded by an assembler label, i.e. the word TRANSFER with a dot in front of it. It can be used in any JMP, JSR or branch instructions and, as the labels are re-evaluated each time the program is assembled, any movement in memory of the labelled part of the routine is taken into account so it isn't necessary to change the destination or offsets in the aforementioned instructions. Have a look at the instruction JSR TRANSFER in 'Main Prog'. It assembles as 20 2B 14. Remember that the bytes of the destination address are reversed.

The first instruction of the subroutine is TYA and is in fact at 142B. TYA is an instruction we haven't used before. The mnemonic stands for Transfer Y to A. It is a

one byte instruction needing no operand. The Y register is copied to the Accumulator leaving the contents of Y unchanged. Followed as it is here with a PushH Accumulator the effect is to store a Y index on the stack. The accumulator is corrupted but this doesn't matter in this part of the program. Index Y holds the counter for the number of bytes to be copied from the data area to the character defining RAM and it has to be stored because as each byte is transferred, Y is decremented. When there are a number of frames in a sequence the same value of Y is required for each frame. So the value of Y is pushed at the beginning of the routine and we get it back from the stack at the end.

The next instruction, LDA (0),Y, isn't new – it loads the accumulator from the address pointed to by a combination of the data pointer at locations 0 and 1 and index Y. When the byte pointed to is in the accumulator it has to be transferred to the character area by a STA (STore A) instruction. The addressing mode used here is called Absolute Indexed because an absolute address is given in the instruction and the value of the Y index is added to this to generate the destination. This mode isn't quite as flexible as indirect addressing but it doesn't use any of zero page and is marginally faster. I have chosen B508 as the top address of character RAM to be changed. This address represents the top of the character and it is the eight bytes making up this character that are altered in each frame to give the illusion of movement.

Y is decremented in the next instruction to move the data pointer ((0),Y) and the character pointer (B508,Y). The decrement Y instruction can affect various flags in the processor status word and the instruction at 1433 tests one of these. The BPL stands for Branch if Plus and should be followed by a one byte offset. Again I have used a label, LOOP2, and let the assembler calculate the offset.

The representation of positive and negative numbers in eight bit binary can be a little difficult to grasp but don't panic. I'll let you go to the library to look up the whys and wherefores of two's complement and Boolean algebra. I'll deal with the practical implications. Until now, we have considered the numbers the computer has been handling as being from binary 00000000 (hexadecimal 0, decimal 0) to binary 11111111 (hexadecimal FF, decimal 255).

This way of evaluating the number has been perfectly valid but I'd now like to introduce a different point of view. The numbers 00000000 to 01111111 have the values 0 to 127 (dec). As soon as bit seven goes to one, however, we get negative numbers. Alright, I hear you say, so 10000001 is -1, right? ...Wrong! -1 is in fact represented by 11111111. When the 6502 does any arithmetic it is necessary to work with eight bits at a time. The carry flag extends this to nine but if we chose to ignore the carry we can do the sum:

11111111	-1	
+1	+1	
00000000	or	0
(binary)		(decimal)

Making 11111111 equivalent to -1 makes sense. Taking the idea further and counting back from zero we get 00000000, 11111111, 11111110, 11111101 etc, which is 0, -1, -2, -3 etc. The most negative number that can be expressed like this is 10000000 or -127. Testing bit seven of a register or other byte of memory would

require several instructions if the designers of the 6502 hadn't included a flag in the processor status word that mirrors bit seven (often referred to as the sign bit) called the negative flag. If it is set after an operation the result is a negative number. Even though we are aware of the sign bit and the negative flag we can ignore them and evaluate the binary numbers as before for the purposes of addresses etc.

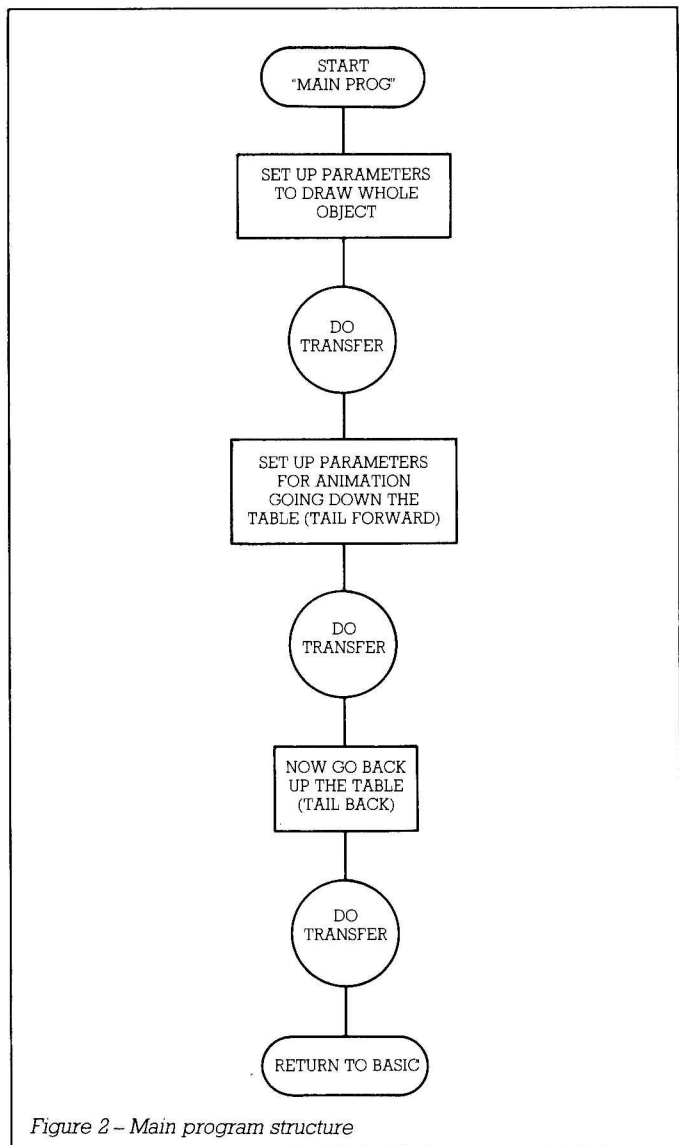


Figure 2 – Main program structure

Let's see how all this fits in the program. When control is passed to the 'Transfer' routine the zero page pointer indicates the start of the relevant block of data and the Y index holds the number of bytes to be copied. In most computing applications it is quite legitimate to count from zero so although in the Draw Fish section there are 18 (hex) bytes to be transferred, Y holds 17. Each time the BPL LOOP2 – LOOP2 loop is executed Y is decremented. So 17 times around Y is 0. When the BPL instruction is reached the loop is executed again because as far as the 6502 is concerned 0 is positive, as bit 7 is 0. On the next pass Y is -1, which as we have seen is 11111111. The negative flag is set so the program exits from the loop to go on to the next frame (if there is one). Normally in copying a list it is natural to start at the top and work down. In this routine we have gone the other way. The Y index acts as both address offset and counter, saving a couple of bytes a compare instruction would have been needed if the count had gone down the list.

Machine Code is mega-fast so the frame changes seem instantaneous and without a delay between frames the whole sequence runs through almost before the screen has been updated. The illusion of movement is lost. The routine called 'Delay', which will be dealt with later, is called between frames. Index X is the frame counter and this is decremented by the DEX instruction.

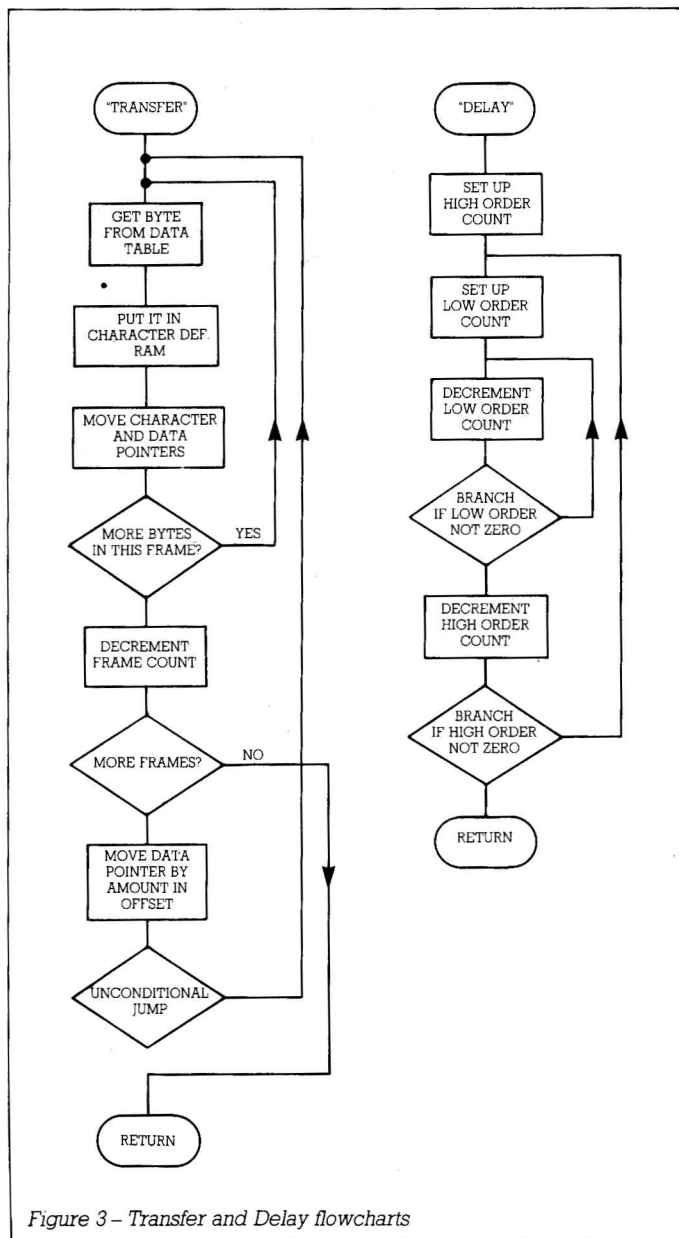


Figure 3 - Transfer and Delay flowcharts

If the result of this action results in X becoming zero then the BEQ END takes the program to the stack adjustment and returns to the Main Prog.

If X is not zero after being decremented then there are more frames to be done and the data pointer has to be updated. The animation sequence consists of the same set of frames displayed first by reading the data downwards in memory and upwards. On the first pass, the data pointer must be increased by eight and on the second pass it must be decremented. It would have been easy to write two different routines, one adding eight to the pointer the other subtracting eight from it. By exploiting the properties of the arithmetic on the 6502 the same routine can be used to handle movements through memory in both direction. Look back to the 'Main Prog' Tail Forward section. You'll see that there is a parameter I have called Offset, stored in zero page at 0003. It has the value of eight to move the data pointer forwards. The

Offset is simply added to the low order byte of the pointer by the three lines starting at 143B. The only instruction that might need explaining is the ADC 3. Previously we have ADded with Carry only in the immediate mode, giving the value to be added to the accumulator as the operand part of the instruction. Here the operand indicates a zero page address, the contents of which are to be added to the accumulator. The result of the addition goes into the accumulator.

On the reverse pass through the frames (Tail Back) the offset is initialised to F8. The carry bit isn't used so the calculation looks like this:

40	(Low order byte of data pointer)
+ F8	(Offset)
38	(New low byte of data pointer, carry is ignored)

I'm sure you won't be surprised to find that F8 is the way we represent -8 in two's complement. Adding -8 is exactly the same as subtracting eight so the same routine has been used to count both upwards and downwards through memory.

After this bit of arithmetic, index Y is recalled from the stack via the Accumulator. Note that the stack is carefully adjusted on exit from the routine to avoid corruption and to leave the return address at the top of the stack.

The delay routine is a simple double precision counter using X and Y indexes. As these two registers are also used in transfer they should not be corrupted by the 'Delay' routine so they are stored on the stack in a similar way to that in which Y is stored in 'Transfer'. The difference is that both indexes are put on the stack and when it comes to get them back it has to be born in mind that they come off in the reverse order. The technical term to describe this behaviour of the stack is Last In First Out, LIFO for short. So the

complement of	TYA	PLA
	PHA	TAX
	TXA	PLA
	PHA	TAY

Other than this the 'Delay' routine is straightforward. No data is moved about, no change is made to any bytes of memory or registers but all this doing nothing takes up a lot of time. The processor can't be told to stop dead and this is why routines like this are needed. There is no reason why this routine shouldn't be incorporated into programs you write but to avoid corruption of the accumulator an extra PHA instruction is required right at the start and a PLA right at the end (before the RTS).

Here ends the program. What follows is the data from 1500 onwards. If you are entering the program using some kind of hex loader or monitor note that the program is discontinuous, i.e. the program ends at 145C and the data starts at 1500. The content of the memory between these two addresses is not relevant to this program.

The machine code can be driven from a BASIC program such as Swimfish. If you want to use it with a BASIC program of any great length it might be necessary to relocate the program but it can reside anywhere in the available RAM by altering the JMP instruction in 1444.

The series started as an answer to an enquiry I saw in the magazine. I hope I have introduced some Machine Code to programmers who wouldn't normally have used it. Although I have by no means covered the full gamut of 6502 instructions I may have inspired you to experiment a little further. If you have any observations you would like to offer I would be delighted to hear from you via Oric Owner.

"Dear Oric Owner"

CASSETTE CONTROL

Nothing is ever written about cassette motor remote control lines, except for a few sentences in the manual. The lead sent with my 16K Oric did not include remote control lines. It is not obvious that all recorders are controlled in the same way, in which case, I am a little afraid of damaging my Oric.

G. D. Towner, Harpenden

Cassette recorders with a remote control facility will have either a seven pin DIN socket, or a set of three jack plug sockets. At the Oric end of the connecting cable, you'll need a seven pin DIN connector. Oric don't supply a remote control lead as there are these two types of interface, and not all owners may have a remote control cassette player. The right lead should be easily obtainable from any electrical retailer.

ODD ORIC

Something about my Oric-1 is different to those in the manual and in other books on the Oric-1. The Oric-1 logo on my computer is the colours red, blue and green. I haven't seen other Oric-1s like this, so wonder why mine is so different.

T. J. Betteridge, Newcastle

Just before Oric stopped making the Oric-1, they made a batch with the coloured logo on them. Internally, they are identical to the previous Oric-1 machines.

ZORGON'S TIP

I have found a method of obtaining endless lives on Zorgon's Revenge, with my 48K Oric-1. Here's what to do.

- a) You must be on the space mission

- b) You must have only one life remaining
c) Destroy the required amount of aliens
d) Shoot the freighter
e) As the lines are rejoining to form the stone, get yourself blown up
f) You should now have men and instead of the number of lives you will have a cyan square

This will give various keyboard symbols, including going backwards through the alphabet.

Jeremy May, Paignton

You must have an early sample of Zorgon's revenge, designed so that reviewers could review it more easily. Later versions won't allow this procedure.

REST ASSURED

Please assure me that Oric Owner will contain copy and advertising for the Atmos. There is no mention of the Atmos in the Dec/Jan issue at all, and I don't know where to start looking for Atmos software.

Jenny Spiers, Cranleigh

We have every intention of covering the Atmos as fully as we cover the Oric-1. You'll find a list of Atmos software in this issue of Oric Owner, and we're sure you'll agree there is plenty to choose from. Still, that doesn't mean we are going to neglect the Oric-1. Let's keep the programs and tips for both machines flowing in.

CASSETTE CAPERS

A few months ago I received my Oric and was very pleased with it. Then I tried to load my program into it. The problem is that it won't load. Well, it loads about one in thirteen times, and then, when I think I've got it, it does a syntax error on me. I have

taken back tape recorders because they won't work, and have tried many different ways of loading without much luck.

I'm working towards O levels (hoping the Oric will help me with some programs), and I have wasted too much time with it. Can you give me some advice, and recommend a decent cassette recorder?

Andrew Lidsey, Worcester

Two cassette recorders we know work very well with Oric computers are the National Panasonic SlimLine, and the Sanyo DB101. Both are under £40 and should be available from Dixons or other good electrical shops.

FRENCH KEYS

Does Oric Products International have any intention of producing an Atmos for the French market with an AZERTY keyboard. This would be of great use to all of us who type more or less correctly on standard French keyboards, but appreciate the quality and price of Oric for such tasks as word processing.

Robert Whitener, Dieulefit, France

Oric are considering such a keyboard, in light of the success of the Oric in France.

MODEM NEEDED

Could you tell me if there is a modem for the 16K Oric-1? Will I need an interface for it, and where can I get it?

Stephen Smart, London E5

Look at the News pages for your answer. Oric have just announced the V23 Modem and interface unit. Modular Concept Peripherals also do an RS232-C interface for the Telemod modem, priced at £38.50. It is reviewed in this issue.

TIPS PROGRAM LOADED BELL

Some programs take many minutes to load, particularly if they are recorded at the slow 300 Baud speed. Here's a short routine from Bertrand Edel of France that sounds a bell when a program is loaded. It means you can go any make a cuppa, or whatever, while the program is loading.

```
100000 REM *** WARNING ***
10100 ST = 0
10200 REPEAT
10300 PRINT CHR$(7)
10400 IF KEY$ = "" THEN ST = 1
10500 WAIT 100
10600 UNTIL ST = 1
10700 RETURN
```

You could alter 10400 so that pressing any key, rather than the space bar, stops the bell. You could also replace the bell sound (CHR\$(7)) with any other noise you preferred.

To use the routine, add it to any program before it is CSAVED, using a GOSUB as the first command. CSAVE the program with AUTO, so that when it is CLOADED, the warning routine will be called immediately.

ORIC-1

To strip the illegal code at the beginning of strings being plotted, use this line:

```
PLOT X,Y,MID$(STR$(...),2)
```

To home the cursor to the top left of the screen, without clearing the screen, PRINT CHR\$(30).

To get inverse characters, add 128 to their ASCII value.

There's a real time clock at memory addresses #276 and #277, where #276 is the low order byte. DEEK(#276) will read the clock and DOKE #276,00 will zero the clock. These four Oric-1 tips are from K. Golding of Morden.



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